



**Figure S1** A receiver operator characteristic curve to show the cut-off level of operative time and area under the curve related to the occurrence of primary graft dysfunction grade 3.

**Table S1** Univariate logistic regression analysis of recipients, donor, and surgical factors as predictors of PGD grade 1 or 2

Variable	OR	P value	95% CI
<b>Recipient factors</b>			
Age, years	0.97	0.06	0.94-1.00
Female	0.91	0.81	0.44-1.91
BMI, kg/m <sup>2</sup>	1.03	0.50	0.95-1.11
BSA, m <sup>2</sup>	1.39	0.70	0.27-7.20
Smoking history	0.69	0.33	0.32-1.46
Hypertension	0.78	0.49	0.37-1.60
Diabetes	0.57	0.18	0.25-1.29
CKD	0.44	0.31	0.09-2.15
Pre VV ECMO use	1.95	0.31	0.53-7.13
Bilateral	4.58	<0.01	1.84-11.4
<b>Etiology</b>			
ILD	0.43	0.05	0.19-0.99
COPD/Emphysema	0.48	0.13	0.19-1.23
ARDS (COVID-19)	3.34	0.01	1.30-8.60
PAH	3.41	0.01	1.27-9.12
Bronchitis/Bronchiectasis	1.41	0.66	0.30-6.60
CF	0.00	0.99	0.00-∞
<b>Laboratory</b>			
Hemoglobin, g/dL	1.00	0.99	0.87-1.15
WBC, 1,000/mm <sup>3</sup>	0.91	0.07	0.82-1.01
Platelets, 1,000/mm <sup>3</sup>	1.00	0.61	1.00-1.00
Sodium, mEq/L	1.06	0.34	0.94-1.19
BUN, mg/dL	1.00	0.88	0.96-1.05
Creatinine, mg/dL	0.65	0.65	0.10-4.20
ALT, U/L	0.99	0.55	0.97-1.02
AST, U/L	0.98	0.16	0.96-1.01
Albumin, g/dL	1.02	0.46	0.97-1.08
Total bilirubin, mg/dL	0.41	0.08	0.15-1.12
INR	1.04	0.96	0.19-5.76
<b>Arterial Blood Gas</b>			
pH	2.14	0.78	0.01-444.2
PaCO <sub>2</sub>	0.99	0.51	0.96-1.02
PaO <sub>2</sub>	1.00	0.17	0.99-1.00
<b>Donor factors</b>			
Age, years	1.01	0.65	0.98-1.04
Female	0.48	0.09	0.21-1.11
<b>Cause of death</b>			
Head trauma	0.97	0.94	0.46-2.03
Anoxia	1.64	0.20	0.77-3.49
Other	0.48	0.15	0.18-1.31
<b>Surgical factors</b>			
Operative time (hours)	1.65	<0.001	1.27-2.15
Intra-op blood transfusion; pRBC	1.10	0.08	0.99-1.23
Intra-op blood transfusion; FFP	1.25	0.07	0.98-1.60
Intra-op blood transfusion; Plt	1.04	0.84	0.73-1.47
Ischemic time (hours)	1.59	<0.01	1.15-2.19
VA ECMO use	5.48	<0.001	2.28-13.2
VA ECMO time (hours)	1.23	0.41	0.75-2.02

PGD, primary graft dysfunction; OR, Odds ratio; CI, confidence interval; BMI, body mass index; BSA, body surface area; CKD, chronic kidney disease; VV ECMO, venovenous extra corporeal membrane oxygenation; ILD, interstitial lung disease; COPD, chronic obstructive pulmonary disease; ARDS, acute respiratory distress syndrome; COVID-19, coronavirus disease 2019; PAH, pulmonary arterial hypertension; CF, cystic fibrosis; WBC, white blood cell; BUN, blood urea nitrogen; ALT, Alanine aminotransferase; AST, aspartate aminotransferase; INR, international normalized ratio; pRBC, packed red blood cells; FFP, fresh frozen plasma; Plt, platelets; VA ECMO, venoarterial extra corporeal membrane oxygenation.

**Table S2** Univariate logistic regression analysis of recipients, donor, and surgical factors as predictors of PGD grade 3

Variable	OR	P value	95% CI
<b>Recipient factors</b>			
Age, years	0.95	0.01	0.92-0.99
Female	2.13	0.12	0.83-5.48
BMI, kg/m <sup>2</sup>	1.05	0.36	0.95-1.16
BSA, m <sup>2</sup>	1.17	0.88	0.15-9.24
Smoking history	0.60	0.31	0.22-1.61
Hypertension	0.68	0.42	0.27-1.73
Diabetes	0.94	0.90	0.36-2.48
CKD	1.97	0.31	0.54-7.25
Pre VV ECMO use	17.0	<0.001	5.03-57.6
Bilateral	2.39	0.10	0.86-6.68
<b>Etiology</b>			
ILD	1.17	0.75	0.46-2.97
COPD/Emphysema	0.12	0.04	0.02-0.93
ARDS (COVID-19)	4.39	<0.01	1.46-13.2
PAH	0.89	0.89	0.18-4.53
Bronchitis/Bronchiectasis	0.90	0.93	0.10-8.45
CF	0.58	0.63	0.07-5.11
<b>Laboratory</b>			
Hemoglobin, g/dL	0.80	0.02	0.66-0.97
WBC, 1,000/mm <sup>3</sup>	0.98	0.73	0.88-1.10
Platelets, 1,000/mm <sup>3</sup>	0.99	0.02	0.99-100
Sodium, mEq/L	1.13	0.09	0.98-1.31
BUN, mg/dL	1.06	0.03	1.00-1.11
Creatinine, mg/dL	3.00	0.31	0.35-25.4
ALT, U/L	1.01	0.51	0.99-1.02
AST, U/L	1.01	0.41	0.99-1.02
Albumin, g/dL	0.22	<0.01	0.09-0.55
Total bilirubin, mg/dL	1.89	0.05	1.01-3.55
INR	2.63	0.17	0.66-10.5
<b>Arterial Blood Gas</b>			
pH	2.55	0.78	0.00-1753.8
PaCO <sub>2</sub>	0.97	0.15	0.92-1.01
PaO <sub>2</sub>	0.99	<0.01	0.99-1.00
<b>Donor factors</b>			
Age, years	1.00	0.92	0.96-1.04
Female	1.37	0.52	0.53-3.55
<b>Cause of death</b>			
Head trauma	0.88	0.80	0.34-2.30
Anoxia	1.23	0.68	0.46-3.30
Other	0.88	0.81	0.29-2.66
<b>Surgical factors</b>			
Operative time (hours)	1.81	<0.001	1.29-2.53
Intra-op blood transfusion; pRBC	1.30	<0.001	1.14-1.49
Intra-op blood transfusion; FFP	1.54	<0.01	1.16-2.05
Intra-op blood transfusion; Plt	1.79	<0.01	1.22-2.62
Ischemic time (hours)	1.34	0.18	0.88-2.05
VA ECMO use	5.62	<0.01	1.76-18.0
VA ECMO time (hours)	1.09	0.74	0.65-1.86

PGD, primary graft dysfunction; OR, Odds ratio; CI, confidence interval; BMI, body mass index; BSA, body surface area; CKD, chronic kidney disease; VV ECMO, venovenous extra corporeal membrane oxygenation; ILD, interstitial lung disease; COPD, chronic obstructive pulmonary disease; ARDS, acute respiratory distress syndrome; COVID-19, coronavirus disease 2019; PAH, pulmonary arterial hypertension; CF, cystic fibrosis; WBC, white blood cell; BUN, blood urea nitrogen; ALT, Alanine aminotransferase; AST, aspartate aminotransferase; INR, international normalized ratio; pRBC, packed red blood cells; FFP, fresh frozen plasma; Plt, platelets; VA ECMO, venoarterial extra corporeal membrane oxygenation.

**Table S3** Univariate logistic regression analysis of recipients, donor, and surgical factors as predictors of PGD grade 1 to 3

Variable	OR	P value	95% CI
<b>Recipient factors</b>			
Age, years	0.97	0.01	0.94-0.99
Female	1.22	0.55	0.64-2.32
BMI, kg/m <sup>2</sup>	1.03	0.35	0.97-1.11
BSA, m <sup>2</sup>	1.30	0.72	0.31-5.54
Smoking history	0.66	0.22	0.34-1.28
Hypertension	0.74	0.36	0.39-1.41
Diabetes	0.69	0.29	0.34-1.37
CKD	0.91	0.86	0.30-2.75
Pre VV ECMO use	5.20	<0.01	1.81-15
Bilateral	3.57	<0.001	1.7-7.51
<b>Etiology</b>			
ILD	0.63	0.19	0.32-1.25
COPD/Emphysema	0.35	0.02	0.14-0.84
ARDS (COVID-19)	3.67	<0.01	1.55-8.7
PAH	2.43	0.06	0.95-6.2
Bronchitis/Bronchiectasis	1.23	0.77	0.3-5.13
CF	0.19	0.13	0.02-1.63
<b>Laboratory</b>			
Hemoglobin, g/dL	0.93	0.25	0.82-1.05
WBC, 1,000/mm <sup>3</sup>	0.94	0.12	0.86-1.02
Platelets, 1,000/mm <sup>3</sup>	1.00	0.14	0.99-1.00
Sodium, mEq/L	1.08	0.14	0.98-1.19
BUN, mg/dL	1.02	0.24	0.99-1.06
Creatinine, mg/dL	1.16	0.85	0.25-5.30
AST, U/L	1.00	0.57	0.98-1.01
ALT, U/L	1.00	0.94	0.98-1.02
Albumin, g/dL	1.01	0.78	0.96-1.06
Total bilirubin, mg/dL	1.12	0.64	0.70-1.79
INR	1.71	0.41	0.48-6.07
<b>Arterial Blood Gas</b>			
Ph	2.16	0.74	0.02-195
PaCO <sub>2</sub>	1.00	0.44	0.998-1.00
PaO <sub>2</sub>	1.00	0.02	0.99-1.00
<b>Donor factors</b>			
Age, years	1.00	0.77	0.98-1.03
Female	0.72	0.34	0.36-1.42
<b>Cause of death</b>			
Head trauma	0.94	0.86	0.49-1.81
Anoxia	1.49	0.25	0.76-2.93
Other	0.61	0.23	0.27-1.38
<b>Surgical factors</b>			
Operative time (hours)	1.67	<0.001	1.33-2.10
Intra-op blood transfusion; pRBC	1.19	<0.01	1.07-1.32
Intra-op blood transfusion; FFP	1.38	<0.01	1.10-1.74
Intra-op blood transfusion; Plt	1.36	0.04	1.01-1.82
Ischemic time (hours)	1.52	<0.01	1.13-2.04
VA ECMO use	5.53	<0.001	2.59-11.8
VA ECMO time (hours)	1.17	0.47	0.77-1.8

PGD, primary graft dysfunction; OR, Odds ratio; CI, confidence interval; BMI, body mass index; BSA, body surface area; CKD, chronic kidney disease; VV ECMO, venovenous extra corporeal membrane oxygenation; ILD, interstitial lung disease; COPD, chronic obstructive pulmonary disease; ARDS, acute respiratory distress syndrome; COVID-19, coronavirus disease 2019; PAH, pulmonary arterial hypertension; CF, cystic fibrosis; WBC, white blood cell; BUN, blood urea nitrogen; ALT, Alanine aminotransferase; AST, aspartate aminotransferase; INR, international normalized ratio; pRBC, packed red blood cells; FFP, fresh frozen plasma; Plt, platelets; VA ECMO, venoarterial extra corporeal membrane oxygenation.

**Table S4** Multivariate logistic regression analysis of recipients, donor, and surgical factors as predictors of PGD grade 1 to 3

Variable	OR	P value	95% CI
Recipient factors			
Age, years	0.99	0.63	0.96-1.03
Pre VV ECMO use	1.64	0.59	0.27-9.83
Bilateral	0.67	0.55	0.18-2.53
Etiology			
ARDS (COVID-19)	1.43	0.54	0.45-4.54
PAH	2.74	0.07	0.92-8.17
Arterial Blood Gas			
PaO <sub>2</sub>	1.00	0.88	0.997-1
Surgical factors			
Operative time (hours)	1.41	0.14	0.89-2.23
Intra-op blood transfusion; pRBC	1.00	0.99	0.80-1.24
Intra-op blood transfusion; FFP	1.14	0.45	0.81-1.62
Intra-op blood transfusion; Plt	1.00	1.00	0.65-1.54
Ischemic time (hours)	0.83	0.41	0.53-1.30
VA ECMO use	3.35	0.02	1.25-8.95

PGD, primary graft dysfunction; OR, Odds ratio; CI, confidence interval; VV ECMO, venovenous extra corporeal membrane oxygenation; ARDS, acute respiratory distress syndrome; COVID-19, coronavirus disease 2019; PAH, pulmonary arterial hypertension; pRBC, packed red blood cells; FFP, fresh frozen plasma; Plt, platelets; VA ECMO, venoarterial extra corporeal membrane oxygenation.

**Table S5** Analysis of Post-operative outcomes of lung transplant patients divided by operative time; univariate analysis

	Operative time <8.18, N=100	Operative time ≥8.18, N=51	P value
PGD grade 3	7 (7.0%)	16 (31.4%)	<0.001
AKI	28 (28%)	34 (66.7%)	<0.001
Dialysis	8 (8.0%)	15 (29.4%)	<0.01
Stroke	5 (5.0%)	1 (2.0%)	0.64
Ischemic stroke	4 (4.0%)	1 (2.0%)	0.86
Hemorrhagic stroke	1 (1.0%)	0 (0.0%)	1.00
Bowel ischemia	1 (1.0%)	1 (2.0%)	1.00
Digital ischemia	1 (1.0%)	5 (9.8%)	0.03
ICU stay (days)	13.0±13.7	17.1±12.8	0.08
Post transplant ventilator (days)	4.8±9.4	8.0±10.6	0.07
Hospital stay (days)	24.5±26.6	28.5±22.5	0.33
1-year survival rate	90.9%	86.2%	0.59

PGD, primary graft dysfunction; AKI, acute kidney injury; ICU, intensive care unit.