



Supplemental Materials

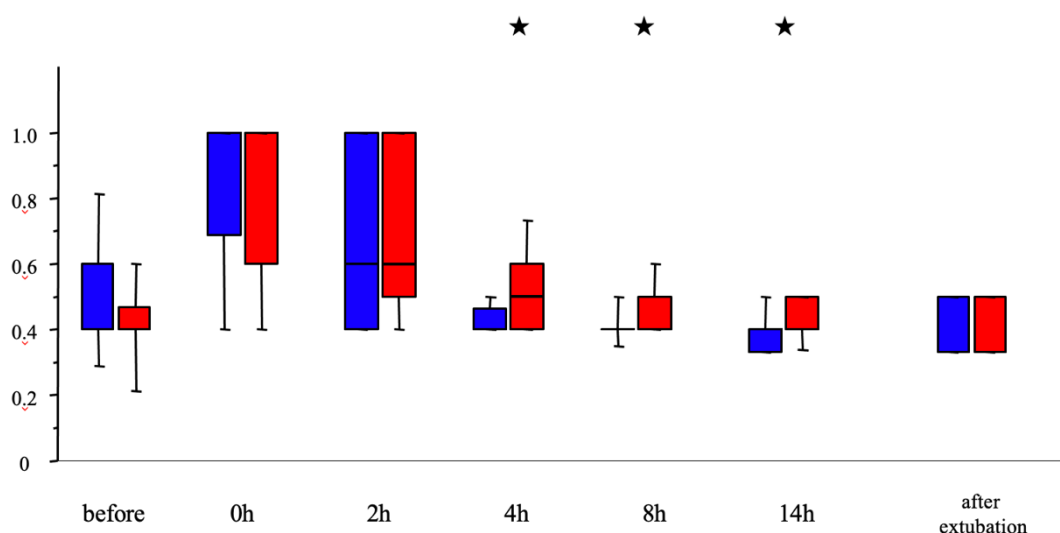


Figure S1. Time-dependent changes in FiO₂. Panel A: Time-dependent change in FiO₂ in patients with and without post-cardiopulmonary bypass (CPB) lung injury (PCLI). Both groups showed similar changes, but FiO₂ in patients with PCLI was significantly higher than FiO₂ in patients without PCLI at 4, 8, and 14 hours after CPB. Panel B: Time-dependent change in FiO₂ in obese and non-obese patients. Both groups showed similar changes, but FiO₂ in obese patients was significantly higher than FiO₂ in non-obese patients at 4 and 14 hours after CPB.

*, $p < 0.05$ between the two groups.

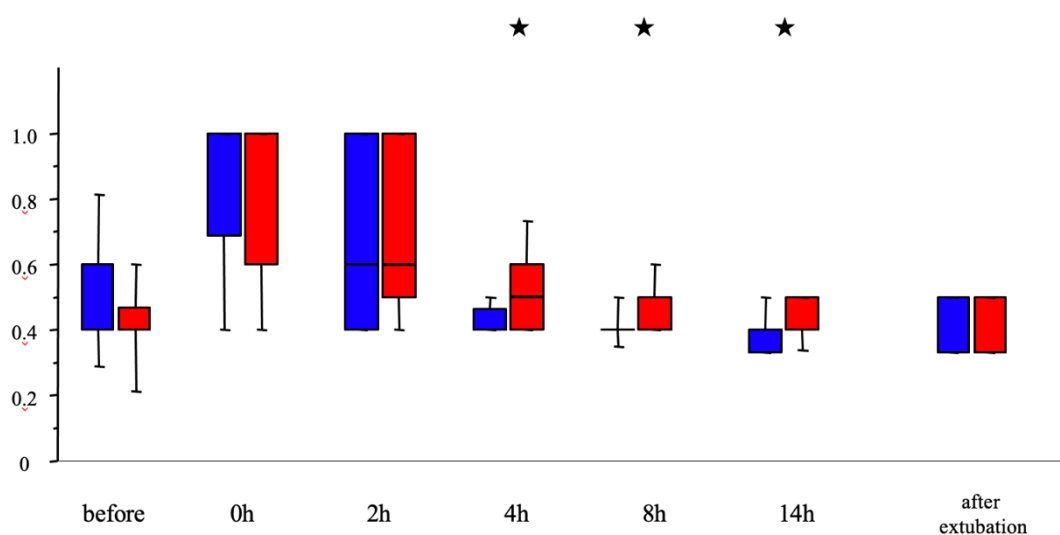


Figure S2. Time-dependent changes of PaCO₂ in patients with and without post-cardiopulmonary bypass lung injury (Panel A) and those with and without obesity (body mass index > 25) (Panel B). In both Panel A and Panel B, PaCO₂ levels were different between the two groups at some time points; however, PaCO₂ was mostly within satisfactory range throughout the observation period.

*1, $p < 0.05$ vs. the value before surgery; *2, $p < 0.05$ between two groups.

Supplemental Table S1: Univariate and multivariate analyses for prolonged ventilation

Univariate	P Value	Hazard Ratio	95% CI
Ventilation \geq 24 hours			
<i>(preoperative factors)</i>			
Age	0.156	0.980	0.953-1.008
Male	0.100	0.512	0.231-1.136
Smoking history	0.669	0.864	0.443-1.687
Current smoking	0.740	0.857	0.345-2.129
Diabetes Mellitus	0.045	0.476	0.231-0.982
Hyperlipidemia	0.782	1.100	0.560-2.160
Hypertension	0.015	0.263	0.090-0.775
eGFR* ¹	<0.001	1.026	1.012-1.040
COPD* ²	0.801	1.100	0.524-2.307
PO ₂ * ³	0.172	1.019	0.992-1.046
PCO ₂ * ³	0.521	1.022	0.956-1.093
Previous stroke	0.817	0.892	0.339-2.346
NYHA \geq II	0.465	1.249	0.687-2.273
LVEF	0.016	1.028	1.005-1.052
Pulmonary hypertension* ⁴	<0.001	0.263	0.128-0.543
Peripheral arterial disease	0.002	0.145	0.044-0.483
Emergency	<0.001	0.093	0.030-0.290
Re-sternotomy	0.250	0.344	0.056-2.123
Euroscore-II	<0.001	0.850	0.777-0.930
<i>(operative factors)</i>			
Aortic valve surgery	0.444	1.300	0.664-2.546
Mitral valve surgery	0.645	1.173	0.595-2.311
Aortic+Mitral valve	0.050	0.393	0.155-0.998
Additional procedures	0.067	0.524	0.263-1.046
Use of IABP	0.002	0.261	0.110-0.621
Fentanyl	0.564	1.013	0.970-1.057
Water balance	<0.001	1.000	0.999-1.000
Lowest hemoglobin* ⁵	0.090	1.293	0.961-1.739
Transfusion* ⁶	<0.001	0.088	0.033-0.237
Inotrope \geq medium * ⁷	0.008	0.355	0.165-0.761
Operation time	<0.001	0.989	0.986-0.993
CPB* ⁸ time	<0.001	0.986	0.981-0.991

ACC* ⁹ time	0.002	0.986	0.977-0.995
PCLI* ¹⁰	<0.001	0.122	0.048-0.314
Multivariate	P Value	Hazard Ratio	95% CI
Ventilation ≥ 24 hours			
DM	0.163	0.356	0.083-1.522
HT	0.298	0.433	0.089-2.095
eGFR	0.655	1.006	0.981-1.031
LVEF	0.336	1.025	0.975-1.077
Pulmonary hypertension	0.521	0.615	0.139-2.718
Emergency	0.999	<0.001	0.000-0.000
Peripheral arterial disease	0.679	0.584	0.046-7.449
Euroscore-II	0.614	0.957	0.808-1.134
Use of IABP	0.999	3677433012	0.000-0.000
Water balance	0.569	1.000	1.000-1.000
Transfusion	0.004	0.109	0.024-0.449
Inotrope ≥ medium	0.145	3.753	0.633-22.248
Operation time	0.093	0.990	0.979-1.002
CPB time	0.170	0.134	0.034-0.538
ACC time	0.806	0.997	0.977-1.019
PCLI	0.005	0.107	0.023-0.506

*1: estimated glomerular filtration rate. *2: chronic obstructive pulmonary disease. *3: values are under room air. *4: diagnosed in preoperative echo cardiogram or catheter examinations. *5: the lowest value during cardiopulmonary bypass. *6: transfusion of red blood cells > 4 units or frozen fraction of plasma >4 units or platelets during surgery. *7: dopamine + dobutamine ≥ 5 µg/kg/min or norepinephrine ≥ 0.15 µg/kg/min. *8: cardiopulmonary bypass. *9: aortic cross-clamp. *10: post-cardiopulmonary bypass lung injury.