Table S1 The comparison between severe AKI and non-severe AKI

Variables	Non-severe AKI (n=121)	Severe AKI (n=13)	P value
Lymphocyte (×10^9/L)	1.8±0.6	1.3±0.7	**0.029**
Albumin (g/L)	40.8±3.7	38.4±3.0	**0.028**
Postoperative mPAP (mmHg)	22.1±7.9	26.7±6.8	**0.045**
Postoperative PVR (dyn·s·cm^{-5}·m^2)	221.4 (144.7–349.2)	321.6 (225.6–492.4)	**0.033**
CPB time (h)	342.9±59.7	379.3±54.7	**0.037**
ACC time (h)	159.1±40.9	184.9±40.2	**0.032**
Mortality	5 (4.1)	3 (23.1)	**0.030**
MVT (h)	61.4 (39.3–91.0)	134.5 (45.0–328.8)	**0.007**
LOIS (d)	6.0 (3.0–8.5)	15.0 (5.0–36.5)	**0.025**

Bolded values represented P value <0.05. Continuous variables are presented as mean ± standard deviation for normally distributed data or median (25th–75th percentile) for non-normally distributed data. Categorical variables are reported as frequencies (percentages). mPAP, mean pulmonary arterial pressure; PVR, pulmonary vascular resistance; CPB, cardiopulmonary bypass; ACC, aortic cross-clamp; MVT, mechanical ventilation time; LOIS, length of intensive care unit stay.

Table S2 Perioperative Quantitative Tendency of sCr and sMb

Variables	Full cohort (n=134)	Non-AKI (n=57)	AKI (n=77)	Severe AKI (n=13)	P value^	P value*
sCr (µmol/L)						
pre-sCr	74.7 (68.4–82.9)	72.1 (65.9–82.1)	77.1 (70.4–84.9)	78.7 (68.5–85.2)	0.068	0.747
POD0	78.0 (66.8–88.4)	71.8 (59.6–81.1)	85.4 (73.9–97.1)	86.8 (81.4–101.8)	**<0.001**	**0.004**
POD1	100.5 (84.3–123.0)	84.3 (73.4–95.9)	117.6 (101.4–136.0)	126.3 (100.5–167.8)	**<0.001**	**0.001**
POD2	86.4 (70.8–104.1)	72.8 (58.0–87.3)	96.1 (76.5–117.4)	136.3 (95.6–195.0)	**<0.001**	**<0.001**
POD3	74.4 (60.5–93.1)	64.1 (52.9–76.1)	85.2 (69.3–107.5)	132.1 (97.2–170.0)	**<0.001**	**<0.001**
POD4	68.8 (57.2–82.4)	65.3 (53.2–73.4)	71.5 (58.6–89.6)	117.9 (81.0–165.2)	**0.003**	**<0.001**
POD5	67.0 (53.9–82.2)	60.5 (48.8–72.2)	74.2 (59.9–95.4)	121.7 (91.7–179.1)	**<0.001**	**<0.001**
POD6	63.7 (55.0–78.8)	59.5 (51.4–70.1)	70.1 (57.3–93.6)	113.7 (74.8–329.8)	**<0.001**	**<0.001**
POD7	67.7 (58.0–82.6)	61.4 (53.9–77.7)	70.5 (60.4–89.9)	89.3 (63.3–183.1)	**0.003**	**0.010**
sMb (ng/mL)						
pre-sMb	22.7 (14.7–28.2)	22.3 (14.9–27.5)	22.8 (14.2–29.7)	23.7 (17.1–30.8)	0.824	0.430
POD0	429.9 (303.7–714.6)	317.1 (235.4–415.3)	559.4 (415.5–844.0)	685.8 (482.9–959.5)	**<0.001**	**0.005**
POD1	335.8 (229.8–527.5)	248.0 (169.2–355.7)	470.5 (293.1–624.3)	604.0 (336.0–885.5)	**<0.001**	**0.002**
POD2	243.6 (158.8–429.4)	211.1 (134.2–300.4)	305.9 (204.0–471.4)	520.1 (235.5–700.5)	**0.001**	**0.003**
POD3	121.0 (72.2–242.7)	91.5 (55.1–142.1)	164.0 (90.1–287.1)	312.0 (136.6–595.9)	**<0.001**	**0.002**

Bolded values represented P value <0.05. Median (25th–75th percentile) for non-normally distributed data. ^, (AKI *vs.* non-AKI), patients with AKI (KDIGO stage 1 or higher) compared with patients without AKI. *, (severe AKI *vs.* non-severe AKI), patients with severe AKI (KDIGO stage 2 and 3) compared with patients without AKI and patients with mild AKI (KDIGO stage1). POD, postoperative day; sMb, serum myoglobin; sCr, serum creatinine.

Table S3 The linear correlation between Ln(sCr) and Ln(sMb) in AKI

AKI	Ln(pre-sMb)	Ln(POD0-sMb)	Ln(POD1-sMb)	Ln(POD2-sMb)	Ln(POD3-sMb)
Ln(pre-sCr)	0.382**	0.17	0.133	0.170	0.094
Ln(POD0-sCr)	0.229*	0.484**	0.333**	0.235*	0.072
Ln(POD1-sCr)	0.244*	0.422**	0.504**	0.310**	0.123
Ln(POD2-sCr)	0.365**	0.223	0.336**	0.443**	0.506**
Ln(POD3-sCr)	0.308**	0.190	0.295**	0.364**	0.581**

**, $P<0.01$; *, $P<0.05$. POD, postoperative day; sMb, serum myoglobin; sCr, serum creatinine.

Table S4 The linear correlation between Ln(sCr) and Ln(sMb) in severe AKI

Severe AKI	Ln(pre-sMb)	Ln(POD0-sMb)	Ln(POD1-sMb)	Ln(POD2-sMb)	Ln(POD3-sMb)
Ln(pre-sCr)	0.265	−0.04	−0.210	−0.397	−0.346
Ln(POD0-sCr)	0.439	0.224	−0.058	−0.193	−0.095
Ln(POD1-sCr)	0.114	0.597*	0.431	0.216	0.216
Ln(POD2-sCr)	0.220	0.609*	0.351	0.322	0.415
Ln(POD3-sCr)	0.390	0.526	0.397	0.380	0.529

**, $P<0.01$; *, $P<0.05$. POD, postoperative day; sMb, serum myoglobin; sCr, serum creatinine.

Table S5 Univariate analysis of AKI

Variables	Univariate analysis		P value
	OR	95% CI	
Demographic data			
Age (years)	1.016	0.990–1.043	0.239
Male (%)	1.458	0.702–3.029	0.312
BMI (kg/m^2)	1.073	0.965–1.192	0.194
Blood type			
A	1.000		0.264
AB	1.560	0.477–5.104	0.462
B	0.559	0.255–1.225	0.146
O	0.840	0.232–3.045	0.791
Comorbidities (%)			
Hypertension	1.894	0.838–4.281	0.125
Type 2 diabetes	0.422	0.096–1.842	0.251
Hyperlipidemia	1.080	0.524–2.225	0.835
CAD	3.188	0.651–15.627	0.153
COPD	1.185	0.506–2.772	0.696
Laboratory tests			
WBC (×10^9/L)	0.902	0.734–1.108	0.324
Neutrophil (×10^9/L)	0.897	0.696–1.154	0.397
Lymphocyte (×10^9/L)	0.825	0.484–1.406	0.479
Hemoglobin (×10 g/L)	0.937	0.788–1.114	0.460
Hematocrit (%)	0.982	0.921–1.048	0.582
Platelet count (×10^9/L)	0.999	0.994–1.005	0.834
Albumin (g/L)	1.054	0.960–1.158	0.269
D-dimer >0.5 (ng/mL)	1.542	0.762–3.120	0.229
Fibrinogen (g/L)	0.963	0.677–1.371	0.836
sCr (µmol/L)	1.023	0.996–1.049	0.092
eGFR (mL/min/1.73 m^2)	0.989	0.968–1.010	0.286
Pre-sMb (ng/mL)	1.001	0.973–1.030	0.931
Ln(POD0-sMb)	6.785	3.101–14.725	**<0.001**
Nephrotoxic agents use (%)			
ACEI/ARB	0.733	0.100–5.368	0.760
MRA	1.756	0.775–3.979	0.177
Diuretics	2.391	0.864–6.619	0.093
Antibiotics	0.850	0.270–2.681	0.782
Contrast media	1.536	0.439–5.375	0.502
Preoperative TTE			
RV basal diameter (mm)	1.022	0.982–1.064	0.288
mPA diameter (mm)	1.027	0.968–1.090	0.373
LVEF (%)	0.996	0.939–1.057	0.894
Preoperative RHC			
mPAP (mmHg)	1.055	1.021–1.090	**0.001**
PVR (dyn·s·cm^{-5}·m^2)	1.001	1.000–1.001	0.118
CI (L/min)	0.969	0.666–1.410	0.871
Postoperative RHC			
mPAP (mmHg)	1.054	1.005–1.105	**0.031**
PVR (dyn·s·cm^{-5}·m^2)	1.003	1.001–1.005	**0.007**
RPH (%)	1.600	0.755–3.389	0.220
Intraoperative transfusion (%)			
PRBCs	0.937	0.420–2.088	0.874
FFP	1.170	0.565–2.425	0.673
PLT	1.206	0.373–3.900	0.755
Intraoperative details			
Surgery time (min)	1.007	1.002–1.013	**0.004**
CPB time (min)	1.010	1.002–1.017	**0.008**
DHCA duration (min)	1.015	0.995–1.035	0.134
ACC time (min)	1.014	1.004–1.024	**0.005**
Concomitant surgery (%)	1.066	0.379–2.995	0.903
UCSD classification			
I	1.000		0.531
II	1.527	0.704–3.311	0.284
III	1.410	0.424–4.687	0.576

Bolded values represented P value <0.05. BMI, body mass index; CAD, coronary artery disease; COPD, chronic obstructive pulmonary disease; WBC, white blood cell; sCr, serum creatinine; eGFR, estimated glomerular filtration rate; POD, postoperative day; sMb, serum myoglobin; ACEI/ARB, angiotensin-converting enzyme inhibitor/angiotensin receptor blocker; MRA, aldosterone receptor antagonist; TTE, echocardiography; RV, right ventricle; mPA, main pulmonary artery; LVEF, left ventricular ejection fraction; RHC, right heart catheterization; mPAP, mean pulmonary arterial pressure; PVR, pulmonary vascular resistance; CI, Cardiac output; RPH, residual pulmonary hypertension; PRBCs, packed red blood cells; FFP, fresh frozen plasma; PLT, platelet concentrates; CPB, cardiopulmonary bypass; DHCA, deep hypothermia circulatory arrest; ACC, aortic cross-clamp; UCSD, University of California at San Diego.

Table S6 Univariate analysis of severe AKI

Variables	Univariate analysis		P value
	OR	95% CI	
Demographic data			
Age (years)	1.040	0.989–1.094	0.130
Male (%)	1.646	0.429–6.316	0.468
BMI (kg/m^2)	1.027	0.866–1.219	0.758
Blood type			
A	1.000		0.714
AB	1.875	0.287–12.263	0.512
B	1.800	0.425–7.622	0.425
O	3.000	0.442–20.397	0.261
Comorbidities (%)			
Hypertension	1.290	0.371–4.488	0.689
Type 2 diabetes	1.357	0.154–11.983	0.783
Hyperlipidemia	0.836	0.243–2.877	0.776
CAD	2.568	0.484–13.623	0.268
COPD	1.796	0.510–6.331	0.362
Laboratory tests			
WBC (×10^9/L)	0.771	0.516–1.151	0.203
Neutrophil (×10^9/L)	0.887	0.568–1.385	0.597
Lymphocyte (×10^9/L)	0.327	0.117–0.912	**0.033**
Hemoglobin (×10 g/L)	0.846	0.643–1.112	0.230
Hematocrit (%)	0.965	0.867–1.075	0.519
Platelet count (×10^9/L)	0.999	0.991–1.008	0.881
Albumin (g/L)	0.854	0.739–0.988	0.033
D-dimer >0.5 (ng/mL)	2.519	0.777–8.163	0.123
Fibrinogen (g/L)	1.385	0.829–2.315	0.213
sCr (µmol/L)	1.006	0.966–1.049	0.758
eGFR (mL/min/1.73 m^2)	0.989	0.955–1.025	0.549
Pre-sMb (ng/mL)	1.022	0.979–1.068	0.315
Ln(POD0-sMb)	4.045	1.446–11.321	**0.008**
Nephrotoxic agents use (%)			
ACEI/ARB	–	–	0.999
MRA	1.656	0.346–7.918	0.528
Diuretics	–	–	0.998
Antibiotics	1.818	0.357–9.272	0.472
Contrast media	2.018	0.392–10.401	0.401
Preoperative TTE			
RV basal diameter (mm)	1.054	0.983–1.130	0.140
mPA (mm)	1.084	0.998–1.178	0.056
LVEF (%)	0.940	0.856–1.032	0.191
Preoperative RHC			
mPAP (mmHg)	1.030	0.981–1.082	0.234
PVR (dyn·s·cm^{-5}·m^2)	1.000	0.999–1.001	0.510
CI (L/min)	1.163	0.633–2.139	0.626
Postoperative RHC			
mPAP (mmHg)	1.069	1.000–1.143	0.051
PVR (dyn·s·cm^{-5}·m^2)	1.002	1.000–1.005	0.104
RPH (%)	1.946	0.612–6.189	0.259
Intraoperative transfusion (%)			
PRBCs	2.176	0.658–7.199	0.203
FFP	1.266	0.389–4.118	0.696
PLT	3.330	0.786–14.103	0.102
Intraoperative details			
Surgery time (min)	1.004	0.997–1.011	0.226
CPB time (min)	1.008	1.000–1.016	0.055
DHCA duration (min)	1.009	0.980–1.038	0.558
ACC time (min)	1.014	1.001–1.027	**0.038**
Concomitant surgery (%)	2.293	0.562–9.348	0.247
UCSD classification			
I	1.000		0.467
II	0.455	0.092–2.250	0.334
III	1.614	0.302–8.611	0.575

Bolded values represented P value <0.05. BMI, body mass index; CAD, coronary artery disease; COPD, chronic obstructive pulmonary disease; WBC, white blood cell; sCr, serum creatinine; eGFR, estimated glomerular filtration rate; POD, postoperative day; sMb, serum myoglobin; ACEI/ARB, angiotensin-converting enzyme inhibitor/angiotensin receptor blocker; MRA, mineralocorticoid receptor antagonist; TTE, echocardiography; RV, right ventricle; mPA, main pulmonary artery; LVEF, left ventricular ejection fraction; RHC, right heart catheterization; mPAP, mean pulmonary arterial pressure; PVR, pulmonary vascular resistance; CI, Cardiac output; RPH, residual pulmonary hypertension; PRBCs, packed red blood cells; FFP, fresh frozen plasma; PLT, platelet concentrates; CPB, cardiopulmonary bypass; DHCA, deep hypothermia circulatory arrest; ACC, aortic cross-clamp; UCSD, University of California at San Diego.

Table S7 Collinearity statistics

Group	Collinearity, tolerance	Statistics, VIF
AKI		
Ln(POD0-sMb)	0.831	1.203
Postoperative PVR	0.883	1.133
Surgery time (min)	0.937	1.068
Severe AKI		
Albumin (g/L)	0.997	1.003
Ln(POD0-sMb)	0.997	1.003

AKI, acute kidney injury; POD0, postoperative day 0; PVR, pulmonary vascular resistance; VIF, variance inflation factor.