

Risk Factor For fDGF	Univariate HR(95% CI)	P-value	Multivariate HR(95% CI)	P-value
uKIM-1/uCr(ng/mmol) 0 hour postoperative	1.327(1.131-1.558)	0.001**	1.272(1.070-1.512)	0.006**
uKIM-1/uCr(ng/mmol) 1st day postoperative	1.327(1.177-1.495)	0.000**	1.235(1.087-1.402)	0.001**
uL-FABP/uCr(ng/mmol) 0 hour postoperative	1.013(1.005-1.022)	0.002**		
uL-FABP/uCr(ng/mmol) 3rd day postoperative	1.011(1.003-1.018)	0.005**		

Figure S1 Univariate and multivariate Cox regression analysis in fDGF among recipients. **, P<0.01. HR, hazard ratio; 95% CI, 95% confidence interval; fDGF, functional delayed graft function.

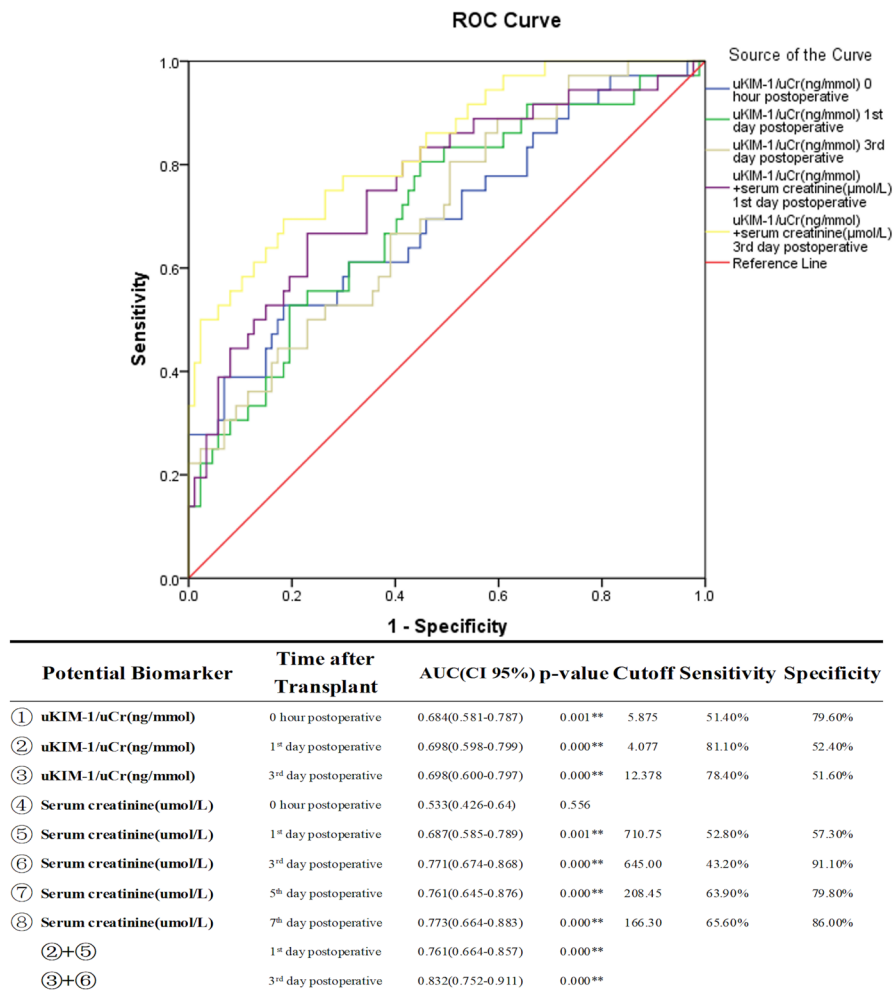


Figure S2 Receiver operating characteristic curves and areas under the curves for predicting fDGF. *, P<0.05; **, P<0.01. fDGF, functional delayed graft function; ROC, receiver operating characteristic curves; AUC, area under curve; 95% CI, 95% confidence interval; uKIM-1, urinary kidney injury molecular 1; uCr, urinary creatinine; uKIM-1/uCr, the ratio of uKIM-1 to uCr.

Table S1 Characteristics of donors at baseline

Characteristics	Total (n=140)	fDGF (n=37)	IGF (n=103)	P value
Sex male, n (%)	94 (67.1)	16 (43.2)	78 (75.7)	0.000*
Age	43.00 (30.00–50.00)	48.50 (31.75–54.25)	40.00 (29.00–50.00)	0.161
Hypertension, n (%)	34 (24.3)	12 (32.4)	22 (21.4)	0.178
ICU length of stay (days)	2.00 (1.00–3.00)	2.00 (1.00–3.00)	0.00 (0.00–00.00)	0.128
Serum creatinine ($\mu\text{mol/L}$)	84.23 \pm 9.04	96.77 \pm 39.31	77.47 \pm 40.89	0.321
Neutrophil (%)	83.60 (66.55–88.85)	83.65 (46.60–89.65)	83.10 (77.7–89.10)	0.871
Lymphocyte (%)	10.80 (6.75–22.70)	11.50 (5.48–43.45)	10.80 (7.70–11.70)	0.828
WBC ($\times 10^9/\text{L}$)	10.86 (5.92–17.64)	11.89 (6.23–27.40)	10.86 (5.3–15.14)	0.625
UAlb (mg/L)	10.00 (0.00–72.50)	40.00 (0.00–93.75)	0.00 (0.00–25.00)	0.408

Data that conform to a normal distribution are represented by the mean \pm standard deviation (SD), and non-normally distributed data are represented by the median (interquartile range). Frequency of occurrence of the event is expressed as the frequency (percentage). *, $P < 0.05$. fDGF, functional delayed graft function; IGF, immediate graft function; ICU, intensive care unit; WBC, white blood cells; UAlb, urinary albumin.

Table S2 Cause of recipients' ESRD before kidney transplantation

Cause of ESRD	Total (n=140)	fDGF (n=37)	IGF (n=103)	P value
GCN	34 (25.60)	13 (36.10)	21 (21.60)	0.261
IgAN	28 (21.10)	4 (11.10)	24 (24.70)	
PKD	4 (3.00)	1 (2.80)	3 (3.10)	
CPN	3 (2.30)	2 (5.60)	1 (1.00)	
MsPGN	2 (1.50)	1 (2.80)	1 (1.00)	
Others	6 (4.50)	2 (5.60)	4 (4.10)	
Unknown	61 (43.60)	14 (37.80)	47 (45.60)	
HSPN	2 (1.50)	0 (0.00)	2 (2.10)	

Frequency of occurrence of the event is expressed as the frequency (percentage). ESRD, end-stage renal disease; fDGF, functional delayed graft function; IGF, immediate graft function; GCN, chronic glomerulonephritis; IgAN, IgA nephritis; PKD, polycystic kidney disease; CPN, chronic pyelonephritis; MsPGN, mesangial proliferative glomerulonephritis; Others, include diabetic nephritis, kidney carcinoma, obesity-related glomerulopathy, aristolochic acid nephropathy and thrombotic microangiopathy; HSPN, Henoch-Schönlein purpura nephritis.

Table S3 eGFR at last follow-up visit between the fDGF and the IGF group

eGFR at last visit ($\text{mL}/\text{min}/1.73 \text{ m}^2$)	Total (n=140)	fDGF (n=37)	IGF (n=103)	P value
>90	34 (24.30)	7 (18.90)	27 (26.20)	0.004*
(60,90]	64 (45.70)	13 (35.10)	51 (49.50)	
(30,60]	31 (22.10)	10 (27.00)	21 (20.40)	
(15,30]	2 (1.40)	0 (0.00)	2 (1.90)	
≤ 15	9 (6.40)	7 (18.90)	2 (1.90)	

Frequency of occurrence of the event is expressed as the frequency (percentage). *, $P < 0.05$. eGFR, estimated glomerular filtration rate; fDGF, functional delayed graft function; IGF, immediate graft function.

Table S4 Comparison of outcomes between the fDGF and the IGF group

Adverse Events	Total (n=140)	fDGF (n=37)	IGF (n=103)	P value
Death	3 (2.1)	2 (5.4)	1 (1.0)	0.110
Graft loss	9 (6.4)	7 (18.9)	2 (1.9)	0.000*

Frequency of occurrence of the event is expressed as the frequency (percentage). *, P<0.05. fDGF, functional delayed graft function; IGF, immediate graft function.

Table S5 Comparison of serum biomarker levels between the fDGF group and the IGF group

Biomarker	Time after transplant	Total (n=140)	fDGF (n=37)	IGF (n=103)	P value
sKIM-1 (ng/L)	0 hour postoperative	88.496±24.683	83.745±18.806	90.202±26.350	0.113
	1st day postoperative	80.196 (66.098–105.589)	73.700 (66.409–97.155)	87.515 (66.000–110.071)	0.078
	3rd day postoperative	91.075 (70.209–111.417)	83.270 (66.488–98.908)	93.917 (70.713–116.045)	0.091
sL-FABP (µg/L)	0 hour postoperative	1,062.729 (914.637–1,293.076)	1,059.133 (906.646–1,313.145)	1,065.819 (914.926–1,293.768)	0.942
	1st day postoperative	1,110.767±216.103	1,136.704±191.614	1,101.450±224.389	0.397
	3rd day postoperative	1,103.278 (917.872–1,301.071)	1,082.246 (965.968–1,281.048)	1,110.274 (896.099–1,315.960)	0.762
sNGAL (ng/L)	0 hour postoperative	8.106 (6.965–9.522)	7.542 (6.795–9.139)	8.239 (7.038–9.570)	0.210
	1st day postoperative	7.901 (6.987–9.374)	7.595 (6.642–9.348)	8.033 (7.044–9.396)	0.422
	3rd day postoperative	8.273 (7.041–9.497)	8.000 (6.810–9.294)	8.637 (7.165–9.564)	0.358
sNAG (ng/L)	0 hour postoperative	216.370 (172.497–269.175)	217.620 (183.707–263.619)	215.120 (168.585–273.913)	0.531
	1st day postoperative	192.798 (166.463–254.948)	192.551 (166.072–225.441)	193.016 (166.696–265.487)	0.177
	3rd day postoperative	217.552 (185.456–262.482)	209.392 (184.908–252.720)	222.870 (185.399–265.962)	0.322

Data that conform to a normal distribution are represented by the mean ± standard deviation (SD), and non-normally distributed data are represented by the median (interquartile range). fDGF, functional delayed graft function; IGF, immediate graft function; sKIM-1, serum kidney injury molecular 1; sL-FABP, serum L-type fatty acid binding protein; sNGAL, serum neutrophil gelatinase-related lipoprotein; sNAG, serum N-acetyl-β-D glucosaminidase.

Table S6 Spearman's correlation coefficients between urinary biomarkers and traditional serum creatinine at different timepoints post transplantation

Biomarker	Time after transplant	uKIM-1/uCr	uKIM-1/uCr	uKIM-1/uCr	uL-FABP/uCr	uL-FABP/uCr	uL-FABP/uCr
		(0 hour postoperative)	(1st day postoperative)	(3rd day postoperative)	(0 hour postoperative)	(1st day postoperative)	(3rd day postoperative)
Serum creatinine (µmol/L)	0 hour postoperative	0.056	0.003	0.091	-0.010	0.046	0.023
	1st day postoperative	0.112	0.128	0.185*	0.054	0.099	0.115
	3rd day postoperative	0.052	0.256*	0.119	0.031	0.099	0.072
	5th day postoperative	0.092	0.247*	0.188	0.115	0.153	0.150
	7th day postoperative	0.158	0.335**	0.172	0.128	0.155	0.130

*P<0.05; **P<0.001. uKIM-1, urinary kidney injury molecular 1; uCr, urinary creatinine; uL-FABP, urinary L-type fatty acid binding protein; uKIM-1/uCr, the ratio of uKIM-1 to uCr; uL-FABP/uCr, the ratio of uL-FABP to uCr.