

Supplemental Materials

Table S1. Baseline characteristics (including anti-hypertension drugs) assessed to predict eGFR < 60 mL/min/1.73m² after 12 months of adrenalectomy by univariate and multivariate logistic regression analysis.

	Univariate		Multivariate	
	Odds ratio (95% C.I.)	P value	Odds ratio (95% C.I.)	P value
Age (year)	1.06 (1.03 - 1.09)	< 0.001		
Gender (Male)	0.34 (0.19 - 0.58)	< 0.001		
Body weight (kg)	1.02 (1.01 - 1.04)	0.012		
BMI (kg/m ²)	1.07 (1.01 - 1.15)	0.032		
SBP (mmHg)	1.04 (1.02 - 1.05)	< 0.001	1.06 (1.02 - 1.11)	0.001
DBP (mmHg)	1.02 (1.00 - 1.04)	0.014		
eGFR (EPI-Cr, mL/min/1.73m ²)	0.93 (0.91 - 0.94)	< 0.001	0.91 (0.88 - 0.95)	< 0.001
Log aldosterone	4.27 (1.55 - 11.81)	0.005		
Plasma renin activity (ng/mL/hr)	1.26 (1.02 - 1.55)	0.031		
Log Aldosterone renin ratio	0.52 (0.32 - 0.84)	0.007		
Potassium (mEq/L)	0.66 (0.44 - 1.00)	0.049		
TTKG ≥ 4.9 (n = 217)	2.10 (0.97 - 4.53)	0.059	6.43 (1.71 - 24.15)	0.006
ACEI or ARB	2.38 (1.39 - 4.13)	0.002		
α-blocker	1.97 (1.10 - 3.51)	0.022		
β-blocker	1.43 (0.84 - 2.44)	0.185		
CCB	1.79 (0.96 - 3.36)	0.069		
Vasodilator	1.88 (0.68 - 5.21)	0.233		
Diuretics	3.01 (1.46 - 6.22)	0.003		

Abbreviations: ACEI: angiotensin converting enzyme inhibitors; ARB: angiotensin receptor blockers; CCB: calcium channel blocker; BMI: body mass index; DBP: diastolic blood pressure; eGFR: estimated glomerular filtration rate; SBP: systolic blood pressure; TTKG: transtubular potassium gradient

Table S2. Factors predicting pre-operative TTKG \geq 4.9 by logistic regression analysis

	Univariate		Multivariate	
	Odds ratio (95% C.I.)	P value	Odds ratio (95% C.I.)	P value
Age (year)	1.00 (0.98 – 1.03)	0.952		
Gender (Male)	1.89 (1.07 – 3.02)	0.027		
Body weight (kg)	0.97 (0.95 – 0.99)	0.006		
BMI (kg/m ²)	0.92 (0.86 – 0.99)	0.024		
SBP (mmHg)	1.00 (0.98 – 1.01)	0.891		
DBP (mmHg)	0.99 (0.97 – 1.01)	0.486		
eGFR (EPI-Cr, mL/min/1.73m ²)	1.00 (0.99 – 1.02)	0.715		
Log aldosterone	8.34 (2.54 – 27.49)	< 0.001	5.93 (1.56 – 22.50)	0.009
Plasma renin activity (ng/mL/hr)	0.97 (0.89 – 1.06)	0.523		
Log aldosterone renin ratio	0.86 (0.56 – 1.36)	0.553		
Potassium (mEq/L)	0.37 (0.22 – 0.60)	< 0.001	0.33 (0.19- 0.59)	< 0.001

Abbreviations: BMI: body mass index; DBP: diastolic blood pressure; eGFR: estimated glomerular filtration rate; SBP: systolic blood pressure; TTKG: transtubular potassium gradient

Table S3. The comparison of variables between TTKG \geq 4.9 and TTKG $<$ 4.9 individuals.

	TTKG \geq 4.9	TTKG $<$ 4.9	P value
Number of participant	141	76	
Age (years old)	50.5 \pm 11.2	50.4 \pm 11.5	0.953
Sex, Female (%)	87 (61.7%)	35 (46.1%)	0.027*
Body weight (kg)	66.79 \pm 14.2	72.6 \pm 14.7	0.005*
BMI (kg/m ²)	25.1 \pm 4.0	26.4 \pm 3.9	0.022*
Hypertension duration (years)	8.3 \pm 7.3	6.6 \pm 6.4	0.088
SBP (mmHg)	154.3 \pm 19.9	154.9 \pm 20.0	0.820
SBP 12 month (mmHg)	132.9 \pm 17.1	137.9 \pm 17.7	0.051
DBP (mmHg)	91.3 \pm 12.9	92.6 \pm 14.0	0.488
DBP 12 month (mmHg)	82.2 \pm 10.8	85.9 \pm 12.2	0.030*
Plasma aldosterone level (ng/dL)	64.83 \pm 42.74	45.56 \pm 24.27	$<$ 0.001*
Plasma renin activity (ng/mL/hr)	0.66 \pm 2.17	0.96 \pm 4.60	0.510
Aldosterone renin ratio	1537.4 \pm 3277.2	778.6 \pm 1791.9	0.063
Serum creatinine level (mg/dL)	0.85 \pm 0.26	0.88 \pm 0.23	0.361
Serum creatinine level 12 month (mg/dL)	0.71 \pm 0.35	1.01 \pm 0.30	0.440
Serum potassium level (mEq/L)	3.39 \pm 0.64	3.77 \pm 0.56	$<$ 0.001*
Serum potassium level 12 month (mEq/L)	4.33 \pm 0.47	4.30 \pm 0.40	0.625
eGFR (EPICr) before operation	91.4 \pm 20.5 #	90.4 \pm 18.0 #	0.716
eGFR (EPICr) 12 month	79.1 \pm 23.2 #	83.8 \pm 20.4 #	0.142
The difference of eGFR before and after operation	12.3 \pm 14.9	6.7 \pm 15.2	0.008*
Urinary ACR before operation	89.0 \pm 231.5 &	86.9 \pm 312.8 \$	0.966
Urinary ACR 12 month	24.8 \pm 46.5 &	37.1 \pm 77.2 \$	0.117
The difference of urinary ACR before and after operation	64.1 \pm 213.2	49.8 \pm 302.7	0.743

Abbreviations: ACR: albumin to creatinine ratio; BMI: body mass index; DBP: diastolic blood pressure; eGFR: estimated glomerular filtration rate; SBP: systolic blood pressure; TTKG: transtubular potassium

gradient

The variables compared between $TTKG \geq 4.9$ and $TTKG < 4.9$ groups was analyzed by independent t-test. * P value < 0.05 regarded as significant difference.

represented $p < 0.001$ when comparing EPI Cr before and after operation in $TTKG \geq 4.9$ group and $TTKG < 4.9$ group, respectively. Statistical analysis was conducted by compare t-test.

& represented $p = 0.006$ when comparing urinary ACR before and after operation in $TTKG \geq 4.9$ group. Statistical analysis was conducted by compare t-test was conducted.

\$ represented $p = 0.236$ when comparing urinary ACR before and after operation in $TTKG < 4.9$ group. Statistical analysis was conducted by compare t-test.

Table S4. The association between percentage of eGFR decrease and variables by linear regression analysis

	Univariate		Multivariate	
	B Coefficient	P value	B Coefficient	P value
Age (year)	0.06	0.549	0.38	0.004
Gender (Male)	-7.97	< 0.001	-9.62	0.008
Body weight (kg)	0.14	0.063		
BMI (kg/m ²)	0.33	0.233		
SBP (mmHg)	0.23	< 0.001	0.33	< 0.001
DBP (mmHg)	0.16	0.050		
eGFR (EPI-Cr, mL/min/1.73m ²)	0.13	0.019	0.21	0.002
Log aldosterone	8.03	0.051	9.62	0.036
Plasma renin activity (ng/mL/hr)	-0.19	0.640		
Log Aldosterone renin ratio	-3.30	0.058		
Potassium (mEq/L)	-6.58	< 0.001		
TTKG \geq 4.9	6.58	0.010	7.06	0.005

Abbreviations: BMI: body mass index; DBP: diastolic blood pressure; eGFR: estimated glomerular filtration rate; SBP: systolic blood pressure; TTKG: transtubular potassium gradient

Table S5. Baseline Characteristics predicting 20 % decrease of eGFR after adrenalectomy by logistic regression analysis

	Univariate		Multivariate	
	Odds ratio (95% C.I.)	P value	Odds ratio (95% C.I.)	P value
Age (year)	1.02 (0.99 – 1.04)	0.150		
Gender (Male)	0.38 (0.23 – 0.63)	< 0.001	0.16 (0.05 – 0.52)	0.002
Body weight (kg)	1.01 (0.99 – 1.03)	0.112		
BMI (kg/m ²)	1.03 (0.97 – 1.09)	0.393		
SBP (mmHg)	1.02 (1.00 – 1.03)	0.007	1.04 (1.02 – 1.07)	0.001
DBP (mmHg)	1.01 (0.99 – 1.03)	0.180	0.96 (0.93 – 0.99)	0.042
eGFR (EPI-Cr, mL/min/1.73m ²)	0.99 (0.98 – 1.00)	0.171		
Log aldosterone	1.98 (0.80 – 4.88)	0.139		
Plasma renin activity (ng/mL/hr)	0.98 (0.87 – 1.09)	0.722		
Log aldosterone renin ratio	0.76 (0.51 – 1.14)	0.184		
Potassium (mEq/L)	0.61 (0.42 – 0.89)	0.010		
TTKG ≥ 4.9	2.03 (1.05 – 3.95)	0.036	2.55 (1.11 – 5.88)	0.028

Abbreviations: BMI: body mass index; DBP: diastolic blood pressure; eGFR: estimated glomerular filtration rate; SBP: systolic blood pressure; TTKG: transtubular potassium gradient

Table S6. The prediction of TTKG \geq 4.9 to clinical outcome (success group vs absent success group) after adrenalectomy.

	Univariate		Multivariate (Backward conditional)	
	Odds ratio (95% C.I.)	P value	Odds ratio (95% C.I.)	P value
Age (year)	0.99 (0.96 – 1.02)	0.454		
Gender (Male)	1.45 (0.76 – 2.76)	0.262		
Body weight (kg)	0.98 (0.96 – 1.00)	0.027		
BMI (kg/m ²)	0.91 (0.85 – 0.98)	0.015		
SBP (mmHg)	1.01 (0.99 – 1.03)	0.146		
DBP (mmHg)	1.03 (0.99 – 1.04)	0.296		
eGFR (EPI-Cr, mL/min/1.73m ²)	1.00 (0.99 – 1.02)	0.717		
Log aldosterone	2.54 (0.74 – 8.72)	0.137		
Plasma renin activity (ng/mL/hr)	0.98 (0.89 – 1.08)	0.664		
Log aldosterone renin ratio	1.01 (0.63 – 1.62)	0.956	0.37 (0.20 – 0.69)	0.002
Potassium (mEq/L)	0.56 (0.38 – 0.92)	0.023		
TTKG \geq 4.9	2.94 (1.27 – 6.78)	0.012	2.90 (1.21 – 6.92)	0.017

The multivariate regression analysis was conducted by full adjustment of variables

Abbreviations: BMI: body mass index; DBP: diastolic blood pressure; eGFR: estimated glomerular filtration rate; SBP: systolic blood pressure; TTKG: transtubular potassium gradient