Table S1. Distribution of surgical approach within different time periods (n=2379)

Parameter	Open nephrectomy, n (%)	Laparoscopic transabdominal nephrectomy, n (%)	Laparoscopic retroperitoneal nephrectomy, n (%)
Time period (years)			
- 1998-2008	243 (55.1)	440 (36.9)	229 (30.7)
- 2008-2018	148 (33.6)	543 (45.5)	411 (55.2)
- 2018-2022	50 (11.3)	210 (17.6)	105 (14.1)
- Total	441 (100)	1193 (100)	745 (100)

Table S2. Baseline donor characteristics stratified according to donors with/without the occurrence of any early complication, n=2379

	Donors with any early complication (n=404)	Donors without any early complications (n=1975)	p-value
- Age at donation, yr	54.1 (±11.5)	52.6 (±11.2)	0.02
- Age grouping at donation, n (%)			
- < 30 yr	8 (2.0)	56 (2.8)	0.12
- 30-40 yr	43 (10.6)	241 (12.2)	
- 41-49 yr	91 (22.5)	450 (22.8)	
- 50-60 yr	131 (32.4)	705 (35.7)	
- 61-70, yr	104 (25.8)	439 (22.2)	
> 70 yr	27 (6.7)	84 (4.3)	
- Sex, n (%)			
- Female	250 (61.9)	1282 (64.9)	0.25
- Male	154 (38.1)	693 (35.1)	
- Donor-recipient relation, n (%)			
- Parents	105 (26.0)	467 (23.7)	0.48
- Siblings	92 (22.8)	421 (21.3)	
- Other relatives	14 (3.5)	103 (5.2)	
- Partners	137 (33.9)	705 (35.7)	
- Other non-relatives	56 (13.8)	279 (14.1)	
- KPD, n (%)	4 (1.0)	47 (2.4)	
- Surgical method, n (%)			
- Nephrectomy open	101 (25)	340 (17.2)	<0.0001
- Laparoscopic transabdominal	151 (37.4)	1042 (52.8)	
- Laparoscopic retroperitoneal	152 (37.6)	593 (30.0)	
- Site, n (%)			
- Right kidney	87 (21.5)	511 (25.9)	0.0003
- Left kidney	222 (55.0)	1160 (58.7)	
- Unknown	95 (32.5)	304 (15.4)	
- Kidney function pre-donation			
- Creatinine, µmol/l	67.4 (±13.8)	67.8 (±13.1)	0.65
- eGFR, CKD-EPI (ml/min/1.^{73m2})	94.5 (±15.0)	94.7 (±13.7)	0.77
- UPCR, mg/mmol§	9.4 (±6.6)	9.2 (±5.3)	0.62
- UACR, mg/mmol§	1.2 (±4.1)	1.1 (±2.0)	0.70
- Blood pressure pre-donation, n (%)			
- Systolic blood pressure, mmHg^{Δ}	128.2 (±14.3)	126.8 (±13.4)	0.09
- Diastolic blood pressure, mmHg^{Δ}	77.7 (±9.3)	77.6 (±8.7)	0.76
- Weight, kg	71.5 (±13.3)	71.9 (±12.9)	0.59
- BMI, kg/m^2	25.4 (±3.7)	25.5 (±3.8)	0.53
- BMI < 30 kg/m^2, n (%)*	347 (86.5)	1738 (88.3)	0.50
- BMI 30-35 kg/m^2, n (%)	50 (12.5)	207 (10.5)	
- BMI > 35 kg/m^2, n (%)	4 (1.0)	23 (1.2)	
- HbA1c, %$^{\#}$	5.4% (±0.3)	5.4% (±0.3)	0.45

Abbreviations: yr=years, KPD=kidney paired donation, eGFR=estimated glomerular filtration rate (calculated by the CKD-EPI formula; in ml/min/1.73m2 of body surface), which was available for 2327 donors. CKD-EPI=Chronic Kidney Disease Epidemiology Collaboration, §UPCR=urine protein-to-creatinine ratio and §UACR=urine albumin-to-creatinine ratio, which was only calculated for donors with undiluted urine (i.e., urine creatinine ≥ 3 mmol/l; n=1796). **BMI=Body mass index, which was available for 2369 donors before donation, #HbA1c= Hemoglobin A1c, available for 430 donors before donation since 08/2017. ΔPre-donation systolic/diastolic blood pressure measurements were available for 2363 donors.

Categorical data are summarized as counts and percentages and analyzed using Fisher's exact test or Pearson's chi-squared test, as appropriate. Continuous data were summarized as means (±SD) and were analyzed using a t test.

Table S3. Independent risk factors of low health-related quality of life based on PCS 12 months after donation, n=1548*

	Univariate logistic regression analysis (95% CI); p-value	Multivariable logistic regression analysis (95% CI); p-value[#]
Risk factors of a low PCS		
- Sex (male vs female)	1.54 (0.76-3.12); 0.23	1.64 (0.80- 3.37); 0.18
- Donor age (61 versus 45 years)	0.75 (0.42-1.35); 0.52	0.81 (0.44- 1.46); 0.58
- Any severe complication (yes vs no)	2.58 (0.59-11.17); 0.21	2.64 (0.59-11.79); 0.20
- Worsening of EB[++] (yes vs no)	4.12 (0.93-18.20); 0.06	3.51 (0.77-15.93); 0.17

Abbreviations: CI= confidence interval, PCS= physical component scale, EB= emotional bonding

Multivariable logistic regression analysis was performed to analyse independent risk factors of low PCS. Low PCS was defined as a scale ≤ 30 (n=31). Individual risk factors were selected based on pre-existing knowledge about potential predictors of low health-related quality of life. The variables chosen for the final model were sex, age, occurrence of any severe complication as well as the emotional bonding (worsening yes vs no). A two-tailed p-value <0.05 was considered to indicate statistical significance.

*Complete post-donation questionnaires 12 months after LKD including information about the emotional bonding were available of n=1548 donors.

[#]The last column represents the whole multivariable model.

[++]The question evaluating emotional bonding was: “How did the relationship to the organ recipient change after donation?”

Table S4. Independent risk factors of low health-related quality of life based on MCS 12 months after donation, n=1548*

	Univariate logistic regression analysis (95% CI); p-value	Multivariable logistic regression analysis (95% CI); p-value[#]
Risk factor of a low MCS		
- Sex (male vs female)	1.56 (0.79-3.10); 0.20	1.63 (0.80- 3.32); 0.18
- Donor age (61 versus 45 years)	0.43 (0.22-0.84); 0.05	0.44 (0.22-0.86); 0.05
- Any severe complication (yes vs no)	2.42 (0.56-10.44); 0.24	2.19 (0.45-10.72); 0.33
- Worsening of EB[++] (yes vs no)	12.12 (4.28-34.31); <0.0001	10.42 (3.56- 30.50); <0.0001

Abbreviations: CI= confidence interval, MCS= mental component scale, EB= emotional bonding

Multivariable logistic regression analysis was performed to analyse independent risk factors of low MCS. Low MCS was defined as a scale ≤ 30 (n=33). Individual risk factors were selected based on pre-existing knowledge about potential predictors of low health-related quality of life. The variables chosen for the final model were sex, age, occurrence of any severe complication as well as the emotional bonding (worsening yes vs no). A two-tailed p-value <0.05 was considered to indicate statistical significance.

*Complete post-donation questionnaires 12 months after LKD including information about the emotional bonding were available of n=1548 donors.

[#]The last column represents the whole multivariable model.

[++]The question evaluating emotional bonding was: “How did the relationship to the organ recipient change after donation?”

Table S5. Independent predictors of early major complications, n=2379

	Univariate logistic regression analysis (95% CI); p-value	Multivariable logistic regression analysis (95% CI); p-value[#]
Risk factors of major complications*		
- Sex (male versus female)	1.00 (0.57-1.73); 0.99	1.16 (0.65- 2.07); 0.61
- Donor age (61 versus 45 years)	1.80 (1.21-2.68); 0.005	1.76 (1.17-2.68); 0.01
- BMI (28 versus 22.9 kg/m^2)	0.82 (0.59-1.14); 0.10	0.77 (0.55-1.07); 0.07
- Site of nephrectomy, left versus right	0.99 (0.54-1.83); 0.98	
- Year of donation		
- 1998-2008	ref	ref
- 2009-2018	0.51 (0.17-1.50); 0.36	1.02 (0.56- 1.86); 0.94
- 2019-2022	0.69 (0.30-1.60); 0.85	0.63 (0.25- 1.55); 0.32
- Surgical method		
…- Laparoscopic transabdominal	ref	ref
…- Laparoscopic retroperitoneal	2.42 (1.38-4.25); 0.002	2.11 (1.84-3.75); 0.008
…- Open nephrectomy	0.51 (0.17-1.50) ; 0.22	0.50 (0.17-1.48) ; 0.21

Abbreviations: CI=confidence interval, BMI= body mass index.

Multivariable logistic regression analysis was performed to analyze the independent risk factors for major early complications*, defined as Dindo-Clavien classification ≥ 3a (n=56 donors). The odds ratios for age and BMI were reported as a change from the lower quartile (25th percentile) to the upper quartile (75th percentile). To account for the long observation time and potential procedural changes, the years of transplantations were forced into the model as a potential confounder. Thus, the point effects of the multivariable model must be interpreted with caution as the model was not made for transplantation eras. The C-statistic of the full model was 0.682.

[#]The last column represents the entire multivariable model.

Table S6. Independent predictors of early major complications, n=1938

	Univariate logistic regression analysis (95% CI); p-value	Multivariable logistic regression analysis (95% CI); p-value[#]
Risk factors of major complications*		
- Sex (male versus female)	0.96 (0.54-1.71); 0.89	1.08 (0.59-1.94); 0.79
- Donor age	1.90 (1.25-2.91); 0.003	1.05 (1.02-1.08); 0.001
- BMI		
20.0 – 24.9 kg/m^2	ref	ref
< 20 kg/m^2	2.19 (0.80-5.17); 0.09	2.60 (0.93-6.32); 0.05
25 - 29.9 kg/m^2	0.88 (0.47-1.63); 0.69	0.89 (0.47-1.69); 0.73
≥ 30	1.09 (0.43-2.44); 0.84	0.85 (0.28-2.12); 0.75
- Site of nephrectomy, left versus right	1.00 (0.53-1.88); 0.99	
- Year of donation		
- 1998-2008	ref	ref
- 2009-2018	0.94 (0.52-1.74); 0.36	0.92 (0.50-1.73); 0.79
- 2019-2022	0.78 (0.34-1.81); 0.85	0.59 (0.21-1.44); 0.27

Abbreviations: CI=confidence interval, BMI= body mass index.

Multivariable logistic regression analysis was performed to analyze the independent risk factors for major early complications*, defined as Dindo-Clavien classification ≥ 3a (n=56 donors). The analysis focused on donors with the nowadays preferred laparoscopic surgical approach. Thus, we excluded donors with open nephrectomy within this sensitivity analysis (n=441). To account for the long observation time and potential procedural changes, the years of transplantations were forced into the model as a potential confounder. Thus, the point effects of the multivariable model must be interpreted with caution as the model was not made for transplantation eras. The C-statistic of the full model was 0.651.

[#]The last column represents the entire multivariable model.