

Impact of Preoperative Metabolic Comorbidities on Renal Function and Survival in Living Kidney Donors

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Abstract

Background: Living donor kidney transplantation is the optimal treatment for patients with end-stage kidney disease, but the long-term impact of preoperative metabolic comorbidities on donor outcomes remains insufficiently characterized. Contemporary guidelines advocate individualized risk stratification, but the clinical significance of conditions such as obesity, hypertension, and dyslipidemia in the context of donor nephrectomy requires further elucidation. **Objective:** To evaluate the impact of preoperative metabolic comorbidities on long-term renal function and survival in a cohort of living kidney donors.

Methods: We conducted a retrospective observational study of 142 consecutive living kidney donors who underwent nephrectomy between January 2015 and December 2019 at a single tertiary transplant center. The mean follow-up time was 100.88 ± 17.75 months. The primary endpoint was a composite outcome defined as decline in estimated glomerular filtration rate (eGFR) <45 mL/min/1.73 m² or all-cause death. Baseline demographic, clinical, and biochemical data were analyzed. Binary logistic regression was used to identify independent predictors of the composite endpoint.

Results: Twenty-four donors (16.9%) reached the composite endpoint, comprising 14.7% with eGFR <45 mL/min and 2.2% who died. On univariate analysis, age at donation (OR 1.12, $p < 0.001$), dyslipidemia (OR 3.32, $p = 0.009$), and baseline eGFR (OR 0.94, $p < 0.001$) were significantly associated with the composite endpoint. On multivariate analysis, age at donation retained as an independent risk factor (OR 1.11, 95% CI 1.02–1.21, $p = 0.01$). The mean decline in eGFR during follow-up was -27.37 ± 17.80 mL/min, corresponding to an average annual decrease of 3.3 mL/min per year. None of the donors had eGFR < 15 mL/min or required renal replacement therapy.

Conclusions: In conclusion, age at donation was the only independent predictor of the composite outcome of renal function decline or mortality after living kidney donation. Preoperative metabolic comorbidities were not independently associated with adverse outcomes in this cohort. These findings support an individualized approach to donor selection, integrating age with the burden and control of metabolic comorbidities to optimize donor safety and transplant outcomes.

Keywords: living kidney donor, donor nephrectomy, metabolic comorbidities, estimated glomerular filtration rate, donor safety, obesity, hypertension, risk stratification