

Baseline Renal Function and Post-Operative Risk of Developing Chronic Kidney Disease (CKD) in Patients Undergoing Radical Nephrectomy and Donor Nephrectomy: There Can Be No Comparison

Introduction and Objective: To evaluate and compare the prevalence of baseline renal function in patients undergoing radical (RN) or donor nephrectomy (DN) and their risk of subsequent CKD after surgery.

Materials and Methods: Patients undergoing RN (n=118) and DN (n=59) at our institution between 2000 and 2008 were retrospectively reviewed. Baseline renal function (eGFR) was determined using the Modification of Diet in Renal Disease (MDRD) formula. CKD was defined as eGFR of lower than 60-ml/min/1.73 m² according to National Kidney Foundation guidelines. Clinical data including demographics and co-morbidities were recorded. Both patient groups were then compared.

Results: Before surgery, 27 (23.5%) patients from RN and no patients for DN had pre-existing CKD with an overall group mean eGFR(SD) of 74.8 (16.9) and 93.2 (31.8) ml/min/1.73 m² respectively. RN patients had significantly greater co-morbidity, including hypertension in 61(54%), diabetes in 20 (18%) and ischemic heart disease in 17 (15%), than the DN group (5%, 0% and 1.8% respectively) (P<0.01). Over a median follow-up period of 3.5 years, progression to CKD in patients with no baseline CKD occurred in 48.7% of RN and 25.9% of DN. Kaplan Meier analysis estimated that the median time to CKD was 5.8 years (95% CI 3.9-7.7) for the RN group and 8.3 years (95% CI 7.3-9.4) for the DN group (log rank p=0.001). Univariable analysis and Multivariable analysis age>50 (P=0.06, OR 2.7 (95% CI 1.0-7.8)), male sex (P=0.05, OR 1.7(95% CI 1.0-2.8)) and pre-operative baseline eGFR<80 ml/min/1.73m² (P<0.001, OR 3.1(95% CI 1.8-5.4)) and RN (P=0.04, OR 1.9, (95% CI 1.0-3.4)) were significantly associated with CKD occurrence.

Conclusion: Despite common inference by clinicians during counseling of patients with kidney cancer, renal function outcomes from DN should not be extrapolated to patients undergoing RN as the greater prevalence of comorbidities in the latter significantly accelerate renal senescence in the uninephrectomy state and greater risk of CKD.

