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Nephron-sparing surgery protects from chronic kidney disease relative to radical nephrectomy but does not impact on other-causes mortality: Long-term (more than 10 years) survival and functional outcomes in patients with a T1a-T1b renal mass

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INTRODUCTION & OBJECTIVES: Several reports demonstrated that nephron sparing surgery (NSS) better protects renal function relative to radical nephrectomy (RN). However, controversies exist whether NSS may also affect other-cause mortality (OCM). In the current study, we aimed to report the long term (more than 10 years) survival and functional outcomes of NSS vs. RN after accounting for clinical characteristics, comorbidities and individual patients' cardiovascular risk.

MATERIAL & METHODS: A multi-institutional collaboration among five European Tertiary Care Centers allowed collecting 1189 patients with a clinical T1a-T1b N0 M0 renal mass and treated between 1988 and 2004. Patients underwent RN (n=678, 57%) or NSS (n=511, 43%) and showed normal estimated glomerular filtration rates (eGFR) before surgery (defined as a pre-operative eGFR≥60ml/min/1.73m^2). Descriptive, univariable and multivariable Cox regression analyses were used to predict the risk of OCM and chronic kidney disease (CKD, defined as post-operative GFR<60ml/min/1.73m^2). To adjust for inherent baseline differences among patients, we included as covariates: age, pre-operative GFR, clinical tumor size, hypertension (none vs. yes vs. controlled by medical therapy), diabetes, baseline Charlson comorbidity index (CCI), body mass index and smoker status (no vs. yes vs. former).

RESULTS: Median follow up period was 10 years (interquartile range, IQR 6-13 yrs). Median age was 61 yrs (IQR 51-68) and median clinical tumor size 4 cm (IQR 3-5). Sixty-six (5.6%) patients had diabetes. Overall, 141 (11.9%) and 154 (13.0%) patients had hypertension or hypertension controlled by medical therapy, respectively. CCI resulted 2 or higher in 21% of the cases.
The 5 yr, 10 yr and 15 yr CKD rates after surgery were 6.3%, 16.4% and 42.3% for NSS vs. 13.2%, 28.4% and 48.9% for RN, respectively (p=0.002, hazard ratio HR 0.65 95%CI 0.49-0.85). At multivariable analyses, patients who underwent NSS showed significantly lower risk to harbour CKD compared with their RN-treated counterparts (p=0.01, HR 0.65; 95% confidence interval, 0.47-0.92).
The 5 yr, 10 yr and 15 yr OCM rates after surgery were 6.0%, 14.0% and 26.6% for NSS vs. 7.3%, 14.2% and 22.5% for RN, respectively (p=0.6, HR 1.08 95%CI 0.80-1.46). At multivariable analyses, after accounting for clinical characteristics, comorbidities and individual cardiovascular risk, patients who underwent NSS showed similar risk to die for OCM compared with their RN-treated counterparts (p=0.8, HR 0.97 95%CI 0.67-1.40).

CONCLUSIONS: When considering long-term survival and functional outcomes in patients with a clinical T1a-T1b mass and normal renal function before surgery, NSS protects from CKD but does not impact on OCM relative to RN.