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INTRODUCTION & OBJECTIVES: The aim of the study was to analyse renal functional outcomes after partial nephrectomy (PN) and to search for predictive factors of chronic kidney disease (CKD) impairment in a multicenter prospective observational study (RECORD Project).

MATERIAL & METHODS: Overall, 1055 patients treated with PN for cortical renal tumors were prospectively recorded from 2009 to 2012. A 24-months functional follow-up was recorded in 709 patients. A uni- and multivariable logistic regression analysis for overall and new-onset CKD impairment (stage migration) were performed.

RESULTS: Median eGFR was 84.5 (69.9-99.1) ml/min/1.73m². According to eGFR, CKD was stage 1 in 275 (38.8%), stage 2 was 341 (48.2%), stage ≥3 was in 92 (12.9%) patients. Open, laparoscopic and robot-assisted PN was performed in 335 (47.3%), 259 (36.6%), 114 (16.1%) cases. Pedicle clamping was performed in 62.4% of cases. Median warm ischemia time (WIT) was 17 (IQR: 13-22) minutes. Median delta eGFR at 3rd, 30th POD was 10.2 (0-23.3) and 8.4 (0-21.2) ml/min/1.73m². Overall and new-onset CKD impairment was recorded in 205 (28.9%) and 125 (45.5%) patients.

At multivariable analysis, females (OR 2.82, CI 1.66-4.80, p<0.0001), ECOG score ≥1 (OR 2.49, CI 1.6-4.0, p=0.004), higher preoperative eGFR (OR 1.02, IC95% 1.01-1.03 p<0.0001) were significant predictive factors of overall CKD impairment, while females (OR 4.79, CI 2.29-10.02, p<0.0001), ECOG score ≥1 (OR 2.80, CI 1.35-5.80, p=0.006), lower preoperative eGFR (OR 0.98, CI 0.95-1.00, p=0.02), open surgical approach (OR 2.76, CI 1.12-6.77 p=0.03) and WIT (OR 0.96, IC 95% 1.00-1.00 p 0.03) were significant predictors of new-onset CKD impairment.

CONCLUSIONS: Open surgical approach, gender and performance status are significant predictive factors of overall and new-onset CKD impairment. Higher preoperative eGFR showed to be a significant predictive factor for stage migration in the entire cohort due to a significant proportion of CKD stage1 patients closed to the CKD stage2 threshold limit value and, indeed, it turned to be protective in the sub group of patients with CKD stage1. Minutes of WIT seem to be significantly associated with CKD impairment just in patients with a preserved renal function. Further analyses will focus on absolute and % eGFR impairment of the entire series.