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# Prediction of chronic kidney disease after partial nephrectomy using preoperative estimated glomerular filtration rate and acute kidney injury criteria

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**Background.** Partial nephrectomy (PN) has a „Strong“ recommendation Strength rating in European Association of Urology guidelines, since it is considered an ideal treatment option for tumors less than 7cm, maintaining part of the renal parenchyma and lowering the possible risk of glomerular filtration decrease [1], [2], [3]. Retrospective data on chronic kidney disease (CKD) after PN shows acceleration of disease onset, however, prospective data is lacking [4].

**Aim.** To evaluate *estimated glomerular filtration rate* (eGFR) and acute kidney injury (AKI) as factors that determine the development of CKD after PN.

**Methods.** Prospective study analysing the data of 63 patients without CKD and albuminuria before partial nephrectomy for a single cT1 N0 M0 renal mass was performed. Patients were divided into two groups according to CKD status by KDIGO criteria after 12 months from surgery: CKD group and non-CKD group. CKD group was evaluated by AKI AKIN and RIFLE criteria persistence.

# Results

After 12 months from surgery 4 (6.3%) patients were with CKD.

CKD group had decreased preoperative eGFR ( $67.8 \pm 8.7$  vs  $92.5 \pm 12.1$ , ml/min,  $p < 0.001$ ), higher hypotension time during PN ( $31.2 \pm 22.5$  vs  $11.9 \pm 17.7$ , min,  $p = 0.042$ ), lower postoperative eGFR after 48h ( $40.2 \pm 13.4$  vs  $77.5 \pm 17.7$ , ml/min,  $p < 0.001$ ) and 2 months from surgery ( $49.0 \pm 7.9$  vs  $85.3 \pm 12.4$ , ml/min,  $p < 0.001$ ), higher AKI by RIFLE serum creatinine (sCr) cases after 48 h from surgery (75% vs 15.3%,  $p = 0.022$ ).

**Table 1.** AKI persistence in CKD patients

Patient, Nr	AKI after 48 h			AKI after 2 months		
	AKIN, stage	RIFLE sCr, class	RIFLE eGFR, class	AKIN, stage	RIFLE sCr, class	RIFLE eGFR, class
1.	1	Risk	Risk	1	-	Risk
2.	-	-	-	1	-	Risk
3.	2	Injury	Injury	-	-	-
4.	1	Risk	Injury	-	-	Risk

# Conclusions

Acute kidney injury by RIFLE serum creatinin and lower preoperative estimated glomerular filtration rate may predict chronic kidney disease after partial nephrectomy.