

Impact of RENAL Nephrometry Score on Renal Function after Partial Nephrectomy in Solitary Kidneys

Introduction and Objective: The RENAL nephrometry system is a well defined and reproducible method for measuring tumor features anatomically. We evaluated the utility of it in predicting renal function after partial nephrectomy in solitary kidneys.

Materials and Methods: From February 1986 to January 2012, 628 partial nephrectomies were performed in our institution. Of these, 38 were for tumors in a solitary functioning kidney and were followed up for at least six months postoperatively. Data was retrospectively collected from our institutional review board's approved database, and analyzed. Preoperative and postoperative glomerular filtration rates were calculated via the Japanese Estimated Glomerular Filtration Rate Equation.

Results: The RENAL score was significantly correlated with ischemia time and percentage of parenchyma spared in partial nephrectomy ($p < 0.0001$ and $p < 0.0001$, respectively) (Fig. 1, 2). On multivariate analyses it was also significantly associated with decreased postoperative glomerular filtration rates, both immediately and at six months after partial nephrectomy ($p = 0.0001$ and $p = 0.0025$, respectively) (Table 1).

Conclusions: This study suggests that the RENAL score is an independent predictor of renal function after partial nephrectomy significantly correlating with ischemia time and percentage of parenchyma spared.

Fig.1. Correlation between RENAL score and ischemia time

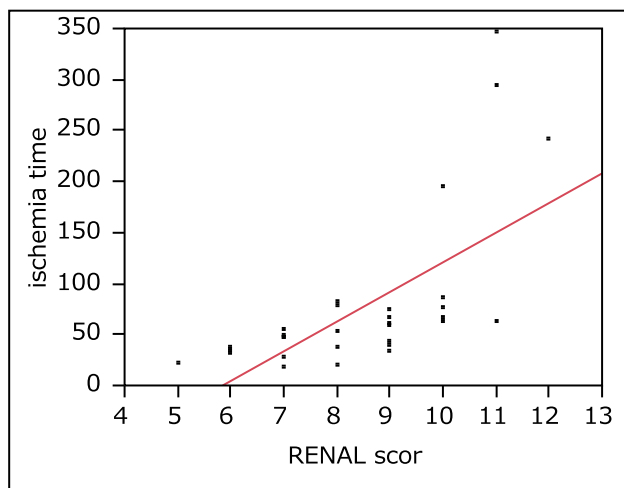


Fig.2. Correlation between RENAL score and % parenchyma preserved

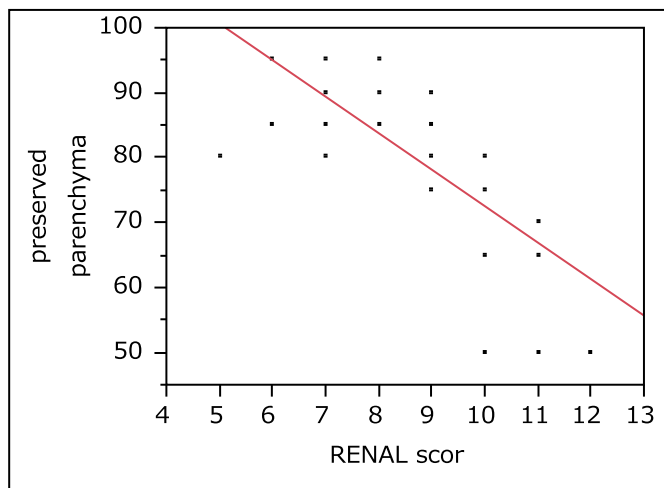


Table1. Impact of preoperative patients characteristics on postoperative decrease in GFR

	immediately after PN			6 months after PN		
	β Estimate	(95% CI)	p Value	β Estimate	(95% CI)	p Value
Age	-0.002	(-0.009,0.005)	0.6	0.004	(-0.0009,0.01)	0.1
Sex	0.05	(-0.03,0.1)	0.2	0.05	(-0.004,0.1)	0.07
BMI	-0.02	(-0.04,0.002)	0.08	0.001	(-0.01,0.01)	0.9
Preop GFR	0.0002	(-0.005,0.006)	0.9	0.004	(0.0004,0.008)	0.03
RENAL score	-0.09	(-0.1,-0.05)	0.0001	-0.05	(-0.08,-0.02)	0.003