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**INTRODUCTION & OBJECTIVES:** The trifecta outcome represents the primary target of nephron sparing surgery. Predictive factors of trifecta achievement are still under evaluation. Few studies have analyzed the predictive role of nephrometric scores in this clinical field.

**MATERIAL & METHODS:** The data of 440 patients treated with open partial nephrectomy for T1 RCC were reviewed in our multi-center prospectively maintained database. The perioperative clinical variables associated with the Trifecta outcome, defined as warm ischemia time (WIT)perioperative complications, were assessed with univariate analysis. The variables independently associated with trifecta were assessed with multivariate analysis.

**RESULTS:** The trifecta outcome was achieved in 315(71.6%) patients; 7.5% of patients had WIT $\geq$ 25 min, 3.5% had PSM and 21.2% had perioperative complications. Reoperation rate for Clavien $\geq$ 3 complication was 6.7%. On univariate analysis the trifecta was significantly associated with female gender( $p<0.0001$ ), lower clinical tumor size ( $p=0.03$ ), no involvement of renal sinus ( $p=0.004$ ), lower PADUA ( $p=0.001$ ), and R.E.N.A.L. score ( $p=0.003$ ), elective/relative surgical indication ( $p=0.01$ ), intraoperative estimated blood loss (EBL) $<500$  cc ( $p<0.0001$ ), and with Fuhrman grade 1-2( $p=0.04$ ). On the multivariate analysis the R.E.N.A.L. and PADUA score (analyzed separately) and EBL ( $R=2.34$ ,  $p=0.037$ )were confirmed as independent predictors of the trifecta outcome.

**CONCLUSIONS:** In our analysis the clarity of the surgical field, associated to the containment of intraoperative bleeding and a favorable tumor nephrometry, resulted of critical importance for the achievement of excellent surgical outcome.

Patients OPN	Patients with TRIFECTA	Patients without Trifecta	Univariate analysis	Multivariate analysis		
			P value	R	P	95% C.I.
N (%)	315 (71.6%)	125 (28.4%)				
Age at surgery	63.4 $\pm$ 12.9	64.3 $\pm$ 12.9	0.74	-	-	-
Male gender	193 (61.3%)	88 (70.4%)	$<0.0001$	0.78	0.33	0.48 – 1.28
BMI	26.0 (23.6-28.0)	26 (23.3-28.9)	0.49			
Clinical tumor size	3.4 $\pm$ 1.6	3.8 $\pm$ 1.8	0.03	0.951	0.50	0.82 – 1.10
Polar location	178 (56.5%)	58 (46.4%)	0.06	-	-	-
Prevalent exophytic growth pattern	151 (47.9%)	49 (39.2%)	0.07	-	-	-

Medial rim location	61 (19.4%)	22 (17.6%)	0.26	-	-	-
Involvement of renal sinus	56 (17.8%)	38 (30.4%)	0.004	0.882	0.74	0.42 - 1.85
UCS dislocated/infiltrated	59 (18.7%)	38 (30.4%)	0.015	-	-	-
PADUA score*	7 (7-8)	8 (7-9)	0.001	1.34	0.009*	1.08 - 1.69
R.E.N.A.L. score*	5 (5-6)	6 (5-7)	0.003	1.43	0.012*	1.09 - 1.72
Preop. Blood Hemoglobin	14.0 ± 1.4	13.8 ± 1.5	0.13	-	-	-
Preop. Serum Creatinine	0.9 ± 0.3	1.1 ± 0.5	0.21	-	-	-
Imperative indication	22 (7.0%)	18 (14.4%)	0.001	1.877	0.122	0.84 - 4.17
Operative time	111.7 ± 32.6	127.8 ± 44.1	0.001	-	-	-
Pedicle clamping	237 (75.2%)	91 (72.8%)	0.25	-	-	-
Warm ischemia time	16.0 ± 4.0	21.3 ± 9.0	<0.0001	-	-	-
EBL ≥ 500 EBL (cc) mean ± SD	17 (5.4%) 180.4 ± 143.3	19 (15.2%) 275.1 ± 204.1	<0.0001	2.34	0.037	1.05 - 5.18
Length of Stay	6 (5-7)	6 (6-7)	0.006	-	-	-
Postoperative complications (any Clavien)	0	94 (75.2%)	-	-	-	-
Clavien ≥ 3 complications	0	29 (23.2%)	-	-	-	-
Benign tumors	53/315 (16.8%)	21/125 (16.8%)	0.53	-	-	-
Positive surgical margins	0	13/104 (12.5%)	-	-	-	-
Fuhrman grade 3-4	33/262 (10.5%)	23/104 (18.4%)	0.04	0.951	0.50	0.82 - 1.10
Perirenal fat invasion	13/262 (5.0%)	9/104 (7.2%)	0.139	-	-	-