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Partial Nephrectomy of Kidney Tumors: Comparison of Clinical Outcomes in Anterior & Posterior Tumors

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INTRODUCTION & OBJECTIVES

Transperitoneal robot-assisted partial nephrectomy (RAPN) is the prevalent technique for managing renal tumors. Concerns have been raised about whether posterior tumors should be approached by retroperitoneoscopic technique. To study aims to compareperioperative characteristics and surgical outcomes of transperitoneal RAPN performed for anterior vs. posterior renal tumors matched for R.E.N.A.L. nephrometric score.

MATERIALS & METHODS

A retrospective analysis of a prospectively maintained database of our institution for patients undergoing RAPN for cT1 renal tumorsfrom 2010-2023 was performed. Patients were classified as Group A for anterior tumors and Group B for posterior renal tumors. Age,Charlson Comorbidity Index (CCI), estimated blood loss (EBL), operation time (OT), ischemia time (IT), positive surgical margins (PSM),≥30% decline in estimated glomerular filtration rate (eGFR) and perioperative complications (Clavien-Dindo) were compared betweenthese groups using nephrometry score categories, R.E.N.A.L. 4-6 as low, 7-9 moderate and 10-12 high complexity.

RESULTS

Included were 513 patients who underwent RAPN. In group A, compared to group B, there were 140 vs. 99 patients with low, 141 vs.100 with moderate, and 22 vs. 11 with high complexity lesions. In the low complexity cohort, the age (p=0.689), CCI (p=0.622),median EBL (100 ml vs. 100 ml, p=0.690), median IT (15 min vs. 15 min, p=0.298), stable eGFR (95.0% vs. 91.9%, p=0.419),grade ≥3 complications (2 vs. 3, p=0.549) and PSM rate (p=0.693) did not differ between group A and B. Only median OT (88 minvs. 95 min, p=0.024) was shorter in group A. Similarly, in the moderate complexity cohort, age (p=0.312), CCI (p=0.151), medianEBL (100 ml vs. 110 ml, p=0.730), median IT (15,5 min vs. 17 min, p=0.187), stable eGFR (88.6% vs. 86.0%, p=0.558), grade ≥3complications (10 vs. 6, p=0.796) and PSM rate (p=0.670) did not differ between group A and B. Only median OT (95 min vs. 106min, p=0.007) was shorter in group A. There were no differences in all parameters between group A and B in the high-complexity cohort.

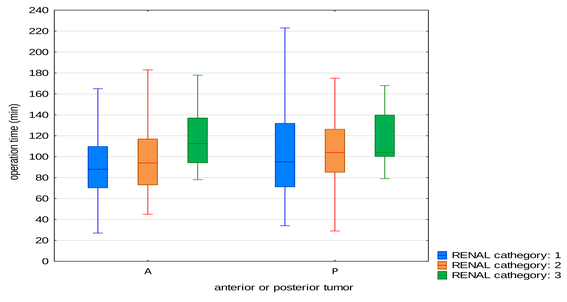
CONCLUSIONS

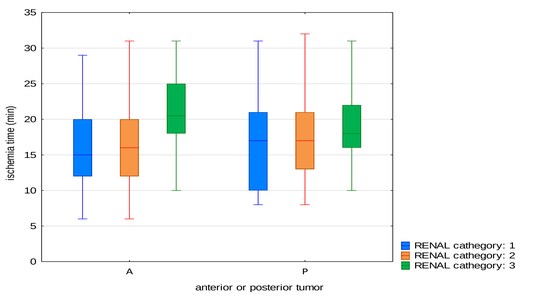
Our study showed similar perioperative results of transperitoneal RAPN in anterior and posterior tumors when matched for R.E.N.A.L.score. Only operation time was shorter in the anterior group for low and moderate-complexity tumors.

LOW RENAL	anterior (n=140)			posterior (n=99)			p-value
	MIN	MAX	median	MIN	MAX	median	
Age	30	83	64	28	83	65	0.689
CCI	0	9	3.64	0	10	3.69	0.622
Operation time	**27**	**217**	**88**	**34**	**223**	**95**	**0.024**
EBL	0	700	100	0	1000	90	0.690
Ischemia time	6	29	15	8	45	15	0.298
Zero ischemia	56 (40.29%)			41 (41.41%)			0.894
PSM	16 (11.43%)			13 (13.13%)			0.693
Change in eGFR	7 (5.0%)			8 (8.08%)			0.419
Complications	9 (6.43%)			10 (10.10%)			0.337
Clavien-Dindo ≥3	2 (1.42%)			3 (3.03%)			0.549

MODERATE RENAL	anterior (n=141)			posterior (n=100)			p-value
	MIN	MAX	median	MIN	MAX	median	
Age	32	82	65	34	81	64	0.312
CCI	0	7	3.35	0	7	3.09	0.151
Operation time	**45**	**183**	**94**	**29**	**207**	**104**	**0.007**
EBL	0	1400	100	0	2000	100	0.730
Ischemia time	6	31	15.5	9	38	17	0.187
Zero ischemia	17 (12.06%)			13 (13.0%)			0.845
PSM	16 (11.35%)			9 (9.0%)			0.670
Change in eGFR	16 (11.35%)			14 (14.0%)			0.558
Complications	18 (12.77%)			15 (15.0%)			0.705
Clavien-Dindo ≥3	10 (7.09%)			6 (6.0%)			0.796

HIGH RENAL.	anterior (n=22)			posterior (n=11)			p-value
	MIN	MAX	median	MIN	MAX	median	
Age	33	79	56.5	32	69	62	0.541
CCI	0	5	1.95	0	4	2.45	0.301
Operation time	78	178	112.5	79	168	104	0.985
EBL	0	400	150	50	1000	200	0.190
Ischemia time	10	31	20	10	35	17	0.383
Zero ischemia	0 (0.0%)			2 (18.2%)			0.105
PSM	1 (4.55%)			0 (0.0%)			1.00
Change in eGFR	7 (31.82%)			2 (18.18%)			0.680
Complications	3 (13.64%)			3 (27.27%)			0.375
Clavien-Dindo ≥3	0 (0.0%)			2 (18.18%)			0.294





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