

# Comparison between Robotic Assisted Partial Nephrectomy and Laparoscopic Assisted Partial Nephrectomy

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## Introduction and Objective:

Nephron-sparing surgery (NSS) is the gold standard for treatment of the small renal mass<sup>[1]</sup>. Robotic-assisted partial nephrectomy (RPN) has been reported superior to laparoscopic partial nephrectomy (LPN)<sup>[2]</sup> with decreased warm ischemic time(WIT)<sup>[3]</sup>, decreased conversion rate, favorable postoperative eGFR, and shorter length of stay(LOS)<sup>[4]</sup>. We aim to compare the two modalities based on single institution experience.

## Methods:

Data of patients who underwent RPN and LPN between Jan 2013 to Mar 2019 were retrospectively collected and reviewed. Total 234 patients were included, 93 for LPN and 141 for RPN. After excluding the patients who defaulted or with incomplete data, this study includes total 206 patients, 82 for LPN and 124 for RPN.

## Results:

Mean age was 60.8 for LPN and 55.4 for RPN. For patients with LPN, 86.6%(n=71) ECOG 0, 11.0%(n=9) ECOG 1, 2.4%(n=2) ECOG 2; for RPN patients, 91.1%(n=113) ECOG 0, 8.9%(n=11) ECOG 1. Median BMI was of 25.1 and 24.1 for LPN and RPN respectively. Median tumor size measured 2.9cm and 2.7cm for LPN and RPN. For LPN patients, 97.6%(n=80) were of stage I, 2.4%(n=2) were of stage III; for RPN patients, 97.6%(n=121) were of stage I, 1.6%(n=2) stage II, and 0.8%(n=1) stage III. Nil significant difference of median nephrometry score between LPN and RPN groups.

Length of stay was significantly lower in RPN group ( $p<0.05$ ). Operative time and warm ischemic time however favors LPN group with significant difference ( $p<0.05$ ). There was no significant difference in blood loss between LPN and RPN groups.

Postoperative complication was assessed via Clavien Dindo score. For LPN patients, 6.1%(n=5) had Grade III complication, while 3.7%(n=3) experienced Grade IV complication; RPN group complication for Grade III and IV were of 0 and 1.6%(n=2) respectively. High grade complication(Clavien III-IV) rate was

significantly lower in RPN group( $p<0.05$ ). Margin positive rate was lower in RPN arm compared with LPN arm.

## Conclusions:

Although from our institution experience, it is hard to justify the advantage of RPN in view of WIT, yet RPN still shows superiority over LPN in terms of decreased LOS, less high-grade postoperative complication, as well as more optimal margin positive rate.

Total (n=206)	Laparoscopic (n= 82)	Robotic (n=124)	p value
Demographics			
- Female	28	42	
- Male	54	82	
Age	37-79 (60.8)	26-79 (55.4)	
ECOG			
0	71 (86.6%)	113 (91.1%)	
1	9 (11.0%)	11 (8.9%)	
2	2 (2.4%)	0 (0%)	
BMI	16.5-41.1 (25.1)	17.7 – 36.9 (24.1)	
Tumor size (cm)	0.9-7.5 (2.9)	1.0 – 9.8 (2.7)	0.405
Laterality			
Right	44 (53.6%)	59 (47.6%)	
Left	38 (46.4%)	65 (52.4%)	
Clinical Stage			
I	80 (97.6%)	121 (97.6%)	
II	0	2 (1.6%)	
III	2 (2.4%)	1 (0.8%)	
Histology			
Clear cell	48 (58.5%)	88 (71.0%)	
Papillary	15 (18.3%)	11 (8.9%)	
Chromophobe	1 (1.2%)	7 (5.6%)	
Others	17 (20.7%)	18 (14.5%)	
Length of stay (days)	2-11 (4.2)	1-11 (3.8)	<0.05
Operative time (mins)	80- 395 (185)	105-504 (211)	<0.05
WIT	6-32 (13.3)	10-53 (23.3)	<0.05
Blood loss (mls)	20-1500	20 -1000	0.443
Pathological staging			
pT0	11 (13.4%)	6 (4.8%)	
pT1a	56 (68.3%)	99 (79.8%)	
pT1b	12 (14.6%)	14 (11.3%)	
pT2	0	2 (1.6%)	
pT3a	3 (3.7%)	3 (2.4%)	
Complications			
Clavien Dindo			
Nil complication	57 (69.5%)	89 (71.8%)	
I	4 (4.9%)	15 (12.1%)	<0.05
II	13 (15.9%)	16 (12.9%)	
III	5 (6.1%)	0	
IV	3 (3.7%)	2 (1.6%)	
Positive Margins	14	13	

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