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Partial Nephrectomy versus Radical Nephrectomy for Elderly Patients with Localized Renal Masses

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Introduction

For appropriately selected patients, partial nephrectomy is preferred over radical nephrectomy as fewer patients develop renal dysfunction. Whilst both have comparable cancer-specific survival, the EORTC 30904 trial suggested the 10-year overall survival rate was lower with partial nephrectomy.

Objective

- To compare clinical, pathological, perioperative, functional, and oncological outcomes between partial nephrectomy (PN) and radical nephrectomy (RN) in elderly patients (≥ 75 years) with localized (cT1–T2N0M0) RCC.

Method

- Retrospective analysis of 236 elderly patients (PN=189, RN=47) from a prospective registry (2017–2024).
- Demographics, tumour characteristics, and histology were compared.
- Peri-operative outcomes such as post-op renal function, post-op complications, length of hospital stay, and 36-month survival were measured.

Patient Demographics

- Age, DM status, and ECOG performance status were comparable
- More patients with poorer renal function with eGFR < 45 were chosen to undergo PN (16% vs 3%, $p = 0.039$)

Variables	PN	RN	p-value
Tumour diameter (cm)	3.4 (2.6-4.5)	6.1 (4.5-9)	< 0.001
PADUA low risk (%)	49	13	< 0.001
cT1a stage (%)	64	4	< 0.001
cT1b stage (%)	34	34	
cT2 stage (%)	2	62	
Benign tumour (%)	26	2	< 0.001
Grade 3-4 (%)	46	72	0.005
Sarcomatoid (%)	1	16	< 0.001
Necrosis (%)	11	39	< 0.001
Benign tumour (%)	26	2	< 0.001
Histology ccRCC (%)	48	73	0.007
Papillary RCC (%)	13	11	
Chromophobe RCC (%)	7	5	

Tumour Characteristics

1. PN patients had smaller tumors, lower PADUA scores and earlier cT stages (cT1a: 64% vs 4%; cT1b: 34% vs 34%; cT2: 2% vs 62%; $p < 0.001$).

2. PN patients showed lower rates of adverse histology

Outcomes

1. Post-operative complications, intra-operative complications, and bleeding reintervention were comparable between RN and PN groups
2. There is difference in positive surgical margins (15% vs 0%, $p = 0.005$)
3. At 36 months, PN had superior overall (92% vs 81%) and disease-free survival (87% vs 66%) ($p < 0.01$).

Variables	PN (n=189)	RN (n=47)	p-value
Post-op Complications	45 (24%)	13 (28%)	0.6
Clavien-Dindo ≤ 2	39 (87%)	11 (85%)	0.8
Clavien-Dindo > 2	6 (13%)	2 (15%)	
POD 1 Creatinine	1.155	1.44	0.071
POD 1 eGFR	58 (46-73)	44 (37.6-53)	< 0.001
POD 3 Creatinine	1.18	1.59	< 0.001
POD 3 eGFR	58,3 (45-71.4)	38 (32.6-48)	0.5
Positive margins (%)	15	0	0.005
Intraop complications (%)	1	0	0.5
Bleeding reintervention (%)	0	2	0.04
36-month OS (%)	92	81	< 0.01
36-month DFS (%)	87	66	< 0.01

Conclusion

In localized (cT1–2N0M0) RCC:

- There is no significant difference between RN and PN in post-operative complications or need for re-intervention.
- PN offers better 36-month overall survival & disease-free survival
- Within appropriately selected patients, PN has comparable oncological safety and should be preferred.