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Background

- Renal mass biopsy (RMB) has not been adopted widely by urologists for the evaluation of small renal mass (SRM) before considering surgical intervention due to concerns for safety, efficacy, and its perceived lack of consequence on management decisions.
- We simulated the potential cost savings and morbidity avoidance at our high-volume tertiary care cancer center if we had performed RMB on all pT1 renal masses undergoing robotic-assisted partial nephrectomy (RAPN).

Methods

- We evaluated our prospectively collected database of n=920 consecutive RAPN for pT1 renal masses.
- Final pathology was classified as benign (AML, oncocytoma), very low risk (chRCC), low risk (pRCC type 1, ccRCC low grade), and high risk (ccRCC high grade, pRCC type 2, or other).
- We compared clinicopathologic variables and morbidity (Clavien I-V) events between these four final pathology risk groups.
- We calculated the Fiscal Year 2019 total median direct cost for RAPN.
- We assessed our institutional cost, complications and outcomes of RMB for cT1 (n=429) to compare baseline risks at our institution.
- We defined four clinical scenarios where routine RMB could have delayed and/or avoided intervention:
 - Benign biopsy in all patients;
 - Benign or very low-risk biopsy in patients ≥ 65 ;
 - Benign, very low or low-risk biopsy in patients ≥ 70
 - Benign, very low or low risk in any patient with $eGFR \leq 44$ OR $ASA \geq 3$

Variable	All Benign n=174	Benign + Very Low in ≥ 65 n=90	Benign + Very Low + Low in ≥ 70 n=104	Benign + Very Low + Low in $GFR \leq 44$ or $ASA \geq 3$ n=164	All benign + very low ≥ 65 + low ≥ 70 + very low and low in $GFR \leq 44$ and $ASA \geq 3$ n=339
CLAVIEN (%)					
I	15 (8.6)	6 (6.7)	8(7.7)	9 (5.5)	22 (6.5)
II	3 (1.7)	0	1 (1)	2 (1.2)	5(1.5)
III	4 (2.3)	3 (3.3)	4 (3.8)	3 (1.8)	8 (2.4)
IV	1 (0.6)	0	1 (1)	1 (0.6)	3 (0.9)
V	0	1 (1.1)	0	1 (0.6)	1 (0.3)
Return to OR (%)	2 (1.1)	0	0	0	2 (0.6)
Transfusion (%)	3 (1.7)	0	0	0	3 (0.9)
Readmission (%)	3 (1.7)	2 (2.2)	3 (2.9)	5(3)	7 (2.1)
Median Net Cost Savings (\$)	981,977	507,920	586,929	925,542	1,913,164

Table 1. Summary of complication avoidance and cost saving if we do not intervene on patients under our proposed clinical scenarios.

Results

- In our RAPN patients, 174 (18.9%), 62 (7%), 383 (42%) and 301 (33%) were benign, very low, low and high-risk tumors.
- In our RMB patients, 120 (27.9%), 17 (3.9%), 240 (55.9%), 52(12.1%) were benign, very low, low and high-risk tumors
- Median total direct cost for RAPN was \$6955/case compared to \$1312/case for RMB.
- Under our proposed clinical scenarios, RMB in all 920 cT1 SRMs could have potentially saved a net cost of \$1.9 million and avoided n=39 Clavien graded complications, 7 readmissions, 3 transfusions and 2 returns to the OR (Table1).
- With the additional cost of performing RMB on remaining n=581 patients, the net cost saving could be \$1.15 million

Conclusions

RMB before intervention under the proposed clinical scenarios may result in potential cost-saving and complication avoidance and should be strongly considered before surgical intervention in localized renal masses.

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