THE EFFECTS OF PROLONGED WARM ISCHEMIA ON LATE RENAL FUNCTION AFTER ROBOTIC PARTIAL NEPHRECTOMY

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INTRODUCTION AND OBJECTIVES: As the experience with robotic partial nephrectomy (RPN) has increased, it’s utility in this setting has also evolved. Increasingly more complex tumors are treated with this modality and this has led to prolongation of warm ischemic time (WIT) in such cases. Nephron sparing literature suggests that volume of the kidney removed rather than WIT is the main predictor of renal function preservation after partial nephrectomy. Our aim was to evaluate the effect of extreme WIT at the time of RPN on late renal function.

METHODS: Our inclusion criteria encompassed patients with tumors less than 7 cm (T1) who had at least one year of renal function follow up data available. Glomerular filtration rate (eGFR) was calculated by using the modification of diet in renal disease formula. Degree of eGFR preservation was defined as a ratio of post-op eGFR to pre-op eGFR and was expressed as a percentage. For WIT we compared the effect of zero ischemia, WIT up to 30 minutes and WIT more than 30 minutes on late GFR preservation. We also included age, pathological tumor size, Pre-op GFR, R.E.N.A.L nephrometry score (RNS) in the univariable and multivariable analysis.

RESULTS: From our 670 RPN patients in our IRB approved institutional database, 269 met our inclusion criteria. The mean age of the cohort was 59 ± 11 years and mean pre-op eGFR was 86.6 ± 22.6 mL/min/1.73 m². The median pathological tumor size was 2.6 cm (IQR 1.9) and the median RNS was 7 (IQR 3). The median time to latest creatinine was 29.2 months (IQR 21.56months). Our median GFR preservation for the cohort was 89.2% (IQR 23.3%). 36 (13.2%) underwent RPN with zero ischemia and 25 (9.2%) had WIT more than 30 minutes.

On univariable analysis WIT, tumor size, pre-op GFR, RNS were significant predictor of % GFR preservation. On multivariable analysis pre-op GFR, tumor size and WIT >30 min were independent predictors of %GFR preservation. There was no difference in % eGFR preservation between zero ischemia and WIT<30 min. WIT>30 min was a predictor of % decline in % GFR preservation.

CONCLUSIONS: Renal function preservation after PN is affected by multiple factors. It appears that tumor size (as a surrogate for amount of kidney affected by surgery) and prolonged WIT have a longstanding effect on renal function after nephrectomy. For average WIT<30min the effect does not appear to be longstanding.

Factors predicting %GFR preservation

<table>
<thead>
<tr>
<th>Effect Size</th>
<th>95.0% Confidence Interval for effect size</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tumor Size(cm)</td>
<td>-2.113 (-4.073, -1.162)</td>
<td>0.035</td>
</tr>
<tr>
<td>Pre-op eGFR</td>
<td>-0.246 (-0.370, -0.122)</td>
<td>0.000</td>
</tr>
<tr>
<td>R.E.N.A.L Score</td>
<td>-1.009 (-2.422, .405)</td>
<td>0.161</td>
</tr>
<tr>
<td>WIT &gt; 30 min vs. WIT &lt; 30 min</td>
<td>-0.82 (-17.739, -0.24)</td>
<td>0.049</td>
</tr>
<tr>
<td>Zero ischemia vs. WIT&lt;30</td>
<td>3.511 (-5.08,12.11)</td>
<td>0.422</td>
</tr>
<tr>
<td>Age</td>
<td>-1.28 (-383.0,127.1)</td>
<td>0.324</td>
</tr>
</tbody>
</table>

WIT:warm ischemic time; eGFR estimated glomerular function rate

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CLINICOPATHOLOGIC OUTCOMES OF TYPE 1 AND TYPE 2 PAPILLARY RENAL CELL CARCINOMA (PRCC)

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INTRODUCTION AND OBJECTIVES: Previous reports have suggested variable outcomes for patients with papillary renal cell carcinoma (PRCC). Our aim was to evaluate a cohort of patients with PRCC and determine the prognostic factors for recurrence and mortality.

METHODS: After obtaining IRB approval, we queried our nephrectomy database to identify patients with PRCC who underwent radical or partial nephrectomy between January 2002 and December 2012. A single uropathologist re-reviewed tissue slides from each case and assigned type following the recommendations of the Vancouver Classification. Mixed type 1 and type 2 histology cases were excluded from analysis. Patients with synchronous and metachronous clear cell RCC were excluded. Cases re-classified as clear cell papillary RCC were also excluded. The primary endpoint (PE) of the study was disease-specific mortality (DSM). The secondary endpoint (SE) was recurrence-free survival (RFS). The evaluation of PE and SE was conducted using Kaplan-Meier estimates. Cox proportional hazard regression models were used to assess predictors of mortality and recurrence.

RESULTS: Among 1,310 patients with renal neoplasms who underwent surgery, we identified 106 (8%) patients with PRCC. Nine cases with mixed features were excluded and a final cohort of 97 patients was analyzed. The mean age at surgery was 59 for type 1 and 64 for type 2 (p=0.01). The average tumor size was 4.3 cm and 5.3 cm for type 1 and type 2 respectively (p<0.1). Seventy nine percent of our patients were pT1 and 92% had organ-confined disease (pT2b or lower). Six (6%) patients experienced recurrence and ten patients died (10%) in a median follow-up of 22 months (ICR: 7.1-39.3). The 5-year RFS was 88.6% (95% CI=73.5-95.4). The 5-year disease-specific survival (DSS) estimate was 86% (95% CI=71.7-93.4%). The estimated RFS and DSS were not different when stratified by type (Log rank test; p>0.05). PRCC subtype was not a predictor of DSS or of RFS in univariate and multivariate analysis. Age was a predictor of DSS in multivariate analysis. TNM stage group was the strongest predictor of recurrence in univariate and multivariate analysis.

CONCLUSIONS: Patients with PRCC have low risk of recurrence and mortality after surgery. We did not find differences in PFS or DSS between PRCC type 1 and type 2.

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PREDICTORS OF SURVIVAL AFTER SURGERY FOR ISOLATED LOCAL RENAL CELL CARCINOMA RECURRENCE

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INTRODUCTION AND OBJECTIVES: The aim of this study was to determine predictors of long-term survival after surgical resection of locally recurrent renal cell carcinoma (LRRCC).

METHODS: Between November 1992 and September 2013, 39 patients underwent surgery for LRRCC. The median age at time of