INTRODUCTION

- The incidental detection of small (<4cm) renal tumors is common.
- 20% of small renal tumors are found to be benign following surgical excision.
- The most common benign renal tumor histology is oncocytoma.
- Pretreatment biopsy cannot reliably differentiate oncocytes from renal cell carcinomas.
- Our goal was to evaluate the ability of ALAD to differentiate malignant renal tumors from oncocytomas on the preoperative contrasted CT scan.

METHODS

- Retrospective review of preoperative CT scans and surgical pathology from 227 robotic assisted partial nephrectomy specimens from a single surgeon was performed.
- ALAD was calculated by measuring the difference in Hounsfield units (HU) between the aorta and the lesion of interest on the same image on the CT scan in the nephrographic phase.

RESULTS

### Table 1: Patient Characteristics

| Age (Mean) | 59 years |
| Gender | 65% male |
| Pathology | 148 (65%), 37 (16%), 11 (5%), 22 (10%), 9 (4%) |

### Table 2: Summary of ROCs association statistics

<table>
<thead>
<tr>
<th>Nephrographic AUC (95%CI)</th>
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<tbody>
<tr>
<td>Chromophobe RCC vs. oncocytoma 0.98(0.91-1.00)</td>
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<tr>
<td>Papillary RCC vs. oncocytoma 0.99(0.97-1.00)</td>
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<tr>
<td>Clear cell RCC vs. oncocytoma 0.82(0.69-0.93)</td>
</tr>
<tr>
<td>RCC any vs. oncocytoma/AML 0.63(0.42-0.84)</td>
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<tr>
<td>RCC any vs. oncocytoma 0.86(0.77-0.96)</td>
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### Chromophobe vs Oncocytoma

- Sensitivity: 100% for each comparison
- Specificity: 86% for each comparison
- Positive Predictive Value: 100% for each comparison
- Negative Predictive Value: 100% for each comparison

### Any RCC vs Oncocytoma/AML

- Sensitivity: 100% for each comparison
- Specificity: 86% for each comparison
- Positive Predictive Value: 100% for each comparison
- Negative Predictive Value: 100% for each comparison

CONCLUSIONS

- ALAD has been shown previously to reliably differentiate between chromophobe RCC and oncocytoma on CT.
- We found that a nephrographic ALAD ≥24 predicted non-chromophobe RCC with 100% probability. This could aid in the management of patients with indeterminate diagnosis of oncocytic neoplasm on renal mass biopsy.
- We also found that ALAD >24 predicted malignant RCC histology with 93% positive predictive value.

DISCUSSION

- ALAD was calculated by measuring the difference in Hounsfield units (HU) between the aorta and the lesion of interest on the same image on the CT scan in the nephrographic phase.
- The ability of ALAD to differentiate malignant pathology from oncocytoma was evaluated using ROC analysis.
- The sensitivity, specificity, positive predictive value, negative predictive value and area under the curve (AUC) were calculated for each comparison.