

## Table of Contents

---

Grassauer, Jacob - #5628 - Prognostic Implications of Tumor Laterality in Renal Cell Carcinoma . . . . .	1
Abstract submission for Institutional Repository . . . . .	1



# Research Week 2024

## Prognostic Implications of Tumor Laterality in Renal Cell Carcinoma

Jacob Grassauer BS, Portland, OR; Wesley Chou MD, Portland, OR; Nicholas Chakiryan MD, Portland, OR

### Keywords

Carcinoma, Renal Cell; Prognosis; Kaplan-Meier Estimate; Demography; Kidney

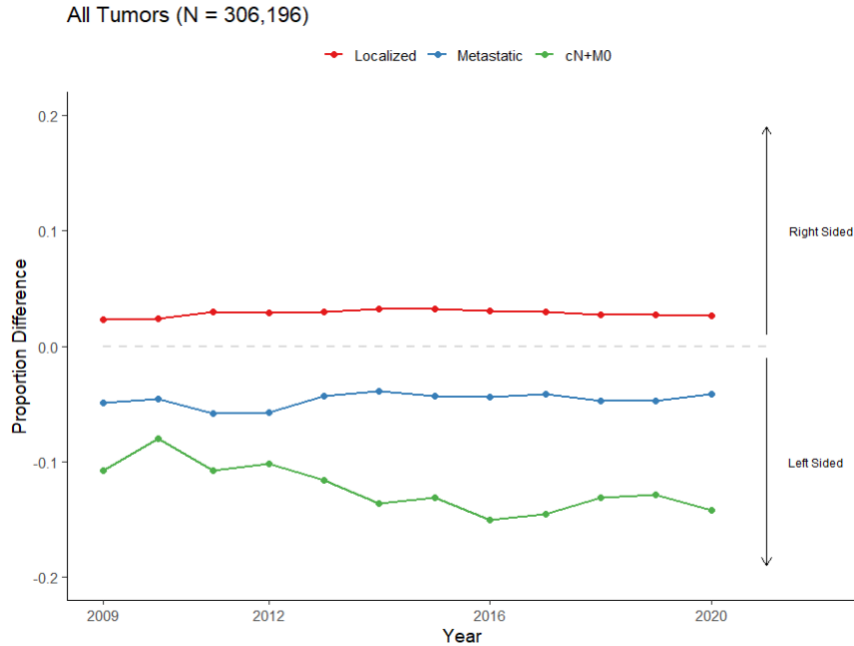
### Abstract

**INTRODUCTION AND OBJECTIVE:** Major anatomical differences between the left and right kidneys may impact the development, detection, and progression of renal cell carcinoma (RCC). There remains debate as to whether laterality has prognostic implication. Some studies suggest that right sided tumors have better overall outcomes while others propose variations in outcome are likely due to detection of more indolent disease. Our primary objective was to evaluate tumor characteristics and outcomes related to laterality in RCC.

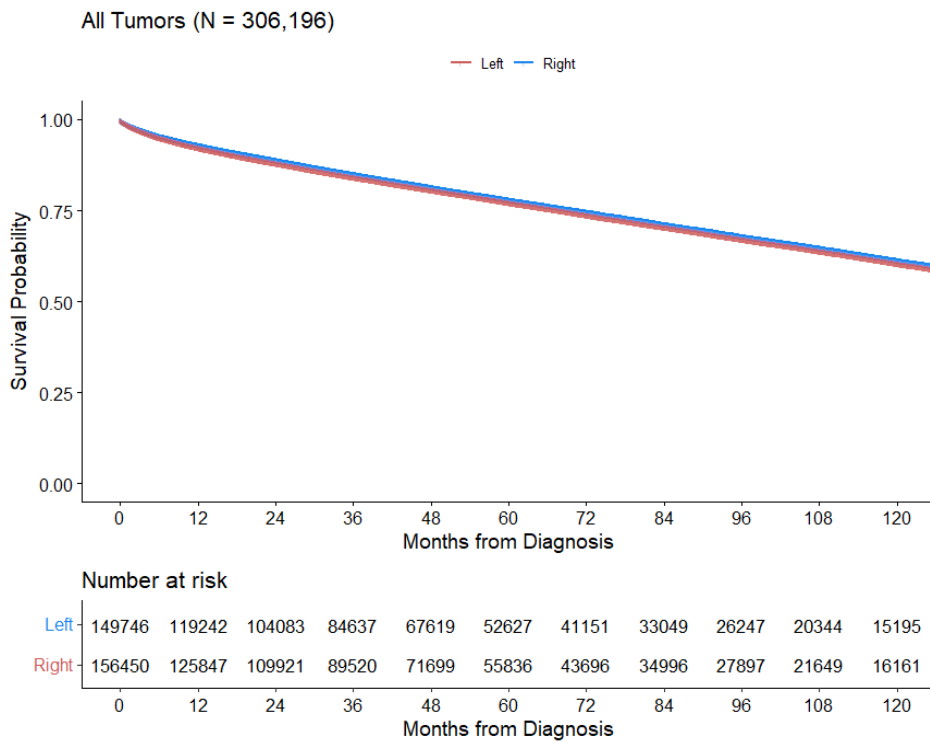
**METHODS:** RCC cases were identified in the National Cancer Database (NCDB) between 2004-2020. Patients were categorized as either localized (cT1,2N0M0), regional (cT1,2,4N+M0), or metastatic (cT1,2,4NanyM+). Patient demographics, clinical staging, and treatments received were included. Several time-series charts were generated to visually demonstrate laterality differences and their variance over time (Fig. 1). Cox proportional hazards regression was utilized to compare clinically relevant variables with overall survival (OS) with stratification between different staging groups. Kaplan-Meier estimates were utilized to visualize survival functions (Fig. 2).

**RESULTS:** 306,196 patients were included. 156,450 (51.1%) had right sided tumors and 283,282 (92.5%) had localized RCC. Localized tumors were more likely to be right sided (0.51 [95% CI 0.51-0.52],  $p < 0.001$ ), while metastatic and nodal positive tumors (cN+M0) were more likely to be left sided (0.48 [0.47-0.49],  $p < 0.001$ ; and 0.43 [0.41-0.45],  $p < 0.001$ ; respectively). For localized disease, smaller tumors were more likely to be right sided (<2cm: 0.52 [0.51-0.52],  $p < 0.001$ ), while tumors >7cm showed no significant site association (0.49 [0.49-0.50],  $p = 0.07$ ). There were no significant associations between left sided laterality and OS (localized RCC: HR 1.01 [0.99-1.02],  $p = 0.50$ ; metastatic RCC: 1.03 [1.00-1.07],  $p = 0.7$ ; cN+M0 RCC: 0.96 [0.86-1.07],  $p = 0.50$ ).

**CONCLUSIONS:** Left-sided RCC were more likely to have nodal or distant metastasis and be larger at diagnosis. However, laterality was not an independent prognostic factor for OS when stratified by clinical stage.



**Figure 1.** Time series chart showing the difference in laterality proportion of renal masses over the year of diagnosis, stratified by clinical stage grouping. The Y-axis proportion difference is Right minus Left, such that values greater than zero are more right sided, with less than zero being more left sided.



**Supplemental Figure 4.** Kaplan-Meier estimates for overall survival, stratified by tumor laterality, for the entire patient population.