Contemporary trends in nephrectomy for renal cell carcinoma in the United States: results from a population based cohort

Kim SP, Shah ND, Weight CJ, Thompson RH, Moriarty JP, Shippee ND, Costello BA, Boorjian SA, Leibovich BC
Department of Urology, Mayo Clinic, Rochester, Minnesota
J Urol. 2011; 186: 1779-85

Purpose: Despite benefits in functional renal outcome and the similar oncological efficacy of partial nephrectomy for renal cell carcinoma, previous studies show marked underuse of partial nephrectomy. We describe national trends in partial and radical nephrectomy using a contemporary, population based cohort.
Materials and Methods: Using the 2003 to 2008 Nationwide Inpatient Sample we identified 188,702 patients treated with partial or radical nephrectomy for renal cell carcinoma at a total of 1,755 hospitals. Multivariate logistic regression was used to assess the independent associations of patient and hospital characteristics with partial nephrectomy. Post-estimations from multivariate logistic regression were done to ascertain the annual predicted probability of partial nephrectomy by hospital feature.
Results: Overall 149,636 (79.3%) and 39,066 patients (20.7%) underwent radical and partial nephrectomy for renal cell carcinoma, respectively. Partial nephrectomy use increased each year from 16.8% in 2003 to 25.1% in 2008 (p for trend <0.001). On multivariate analysis patients were more likely to undergo partial nephrectomy at teaching (OR 1.31, $p < 0.001$) and urban (OR 1.13, $p = 0.05$) hospitals compared to nonteaching and rural hospitals, respectively. Each quartile of higher nephrectomy annual volume was associated with higher odds of partial nephrectomy compared to the lowest quartile (OR 1.21, $p < 0.001$). Although annual predicted partial nephrectomy use increased across all hospitals, differences in annual partial nephrectomy use by teaching status, site (urban vs rural) and case volume persisted with time.
Conclusions: Although the use of partial nephrectomy for renal cell carcinoma is increasing nationally across all hospitals, academic and urban hospitals as well as those with higher nephrectomy volume continue to show higher partial nephrectomy use for renal cell carcinoma.

Editorial Comment

Since development of laparoscopy in urology, we evolved from open nephrectomy to partial open nephrectomy to Laparoscopic radical Nephrectomy, then nephron-sparing laparoscopic partial nephrectomy

and currently ablative technique. This study demonstrates a national increase in the use of PN as an acceptable surgical option for RCC. While the annualized rate of PN per 100,000 individuals increased by 90% from 2003 to 2008, there was a corresponding 49% increase for PN and a 10% decrease for RN as a proportion of all renal surgeries for RCC in our study. Prior epidemiological studies from SEER (Surveillance, Epidemiology and End Results) and the National Kidney Cancer Database have shown marked underuse of PN for small renal masses, which was further supported by other studies using the NIS from 1998 to 2002.

This study suggests that there continues to be a gradual increase in PN use for RCC nationwide. While PN was more likely to be done at hospitals with a higher surgical volume, urban setting and teaching status from 2003 to 2008, the annual rate of increase was similar at hospitals previously identified with PN underuse. Low case volume, nonteaching and rural hospitals continued to have gradual increases in annual predicted PN use with time.

The difficult and steep learning curve to learn laparoscopic partial nephrectomy may direct training towards ablative small renal masses techniques to address some of the issues, since the oncological outcomes seem comparable to other nephron-sparing techniques.

Dr. Fernando J. Kim
Chief of Urology, Denver Health Med. Ctr.
Associate Professor, Univ. Colorado Health Sci. Ctr.
Director of Minimally Invasive Urol. Oncology, UCHSC
Denver, Colorado, USA
E-mail: fernando.kim@dhha.org