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Simple enucleation is equivalent to traditional partial nephrectomy for renal cell carcinoma: results of a nonrandomized, retrospective, comparative study

Minervini A, Ficarra V, Rocco F, Antonelli A, Bertini R, Carmignani G, Cosciani Cunico S, Fontana D, Longo N, Martorana G, Mirone V, Morgia G, Novara G, Roscigno M, Schiavina R, Serni S, Simeone C, Simonato A, Siracusano S, Volpe A, Zattoni F, Zucchi A, Carini M
Members of the SATURN Project-LUNA Foundation University of Florence, Florence, Italy
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Purpose: The excision of the renal tumor with a substantial margin of healthy parenchyma is considered the gold standard technique for partial nephrectomy. However, simple enucleation showed excellent results in some retrospective series. We compared the oncologic outcomes after standard partial nephrectomy and simple enucleation.
Materials and Methods: We retrospectively analyzed 982 patients who underwent standard partial nephrectomy and 537 who had simple enucleation for localized renal cell carcinoma at 16 academic centers between 1997 and 2007. Local recurrence, cancer specific survival and progression-free survival were the main outcomes of this study. The Kaplan-Meier method was used to calculate survival functions and differences were assessed with the log rank statistic. Univariable and multivariable Cox regression models addressed progression-free survival and cancer specific survival.
Results: Median followup of the patients undergoing traditional partial nephrectomy and simple enucleation was 51 ± 37.8 and 54.4 ± 36 months, respectively (p = 0.08). The 5 and 10-year progression-free survival estimates were 88.9 and 82% after standard partial nephrectomy, and 91.4% and 90.8% after simple enucleation (p = 0.09). The 5 and 10-year cancer specific survival estimates were 93.9% and 91.6% after standard partial nephrectomy, and 94.3% and 93.2% after simple enucleation (p = 0.94). On multivariable analysis the adopted nephron sparing surgery technique was not an independent predictor of progression-free survival (HR 0.8, p = 0.55) and cancer specific survival (HR 0.7, p = 0.53) when adjusted for the effect of the other covariates.
Conclusions: To our knowledge this is the first multicenter, comparative study showing oncologic equivalence of standard partial nephrectomy and simple enucleation.

Editorial Comment

In this pioneering study, it is fundamental to emphasize important information regarding the limits of renal tumor simple enucleation – that could be the message for those meticulous readers with a less optimistic view.

The major point here is about the dubious clinical significance of simple enucleation in terms of less morbidity while it comes with the cost of worse cancer-specific survival, for Fuhrman grade 4 diseases, even with the enucleation group biased for lessen high grade tumors in this study, clearly showing that an additional margin of peri-tumor healthy renal parenchyma is necessary for high grade tumors better outcomes in short follow-up.

Given the limitations in renal biopsies, though increasingly progressing (1), further improvements in our capacity of identifying patients with high-grade disease and those at increased risk for poor outcomes would be essential to warrant widespread safe enucleations.

Although this study and others showing a small proportion of clinical recurrence for positive margin (2) encourage urologists to perform nephron-sparing surgery, even if the anticipated resection margin is close and touches the collecting system or renal hilum, an intensive surveillance with closer and longer follow-up is needed in such special situations, warranting timely rescue measures, being the cost and burden of serial imaging significant.

Moreover, residual cancer cells may require many years to become clinically apparent, since the average annual growth rate of radiographically visible masses can be as small as 0.13 cm/year (3) with rare but real potential to metastases, leaving concerning to longer follow-up.

While the benefits of nephron sparing surgery in terms of preventing chronic kidney disease and its associated cardiovascular morbidity and potential mortality are progressively clear (4,5), selection bias, variations in technique, tumor size and location make adequate evaluation of the enucleation and its comparison to standard partial nephrectomy difficult.

Additionally, it is well recognized the phenomenon that despite increased detection and treatment of small tumors, mortality from RCC did not decrease (6), suggesting a lead time bias which uniquely joins kidney and prostate cancer; most patients will very likely die with their cancer rather than of their cancer.

Further prospective, randomized and unbiased studies with technique standardization are necessary and advance in the identification of clinically significant tumors will be important in determining the renal masses needing treatment, as well as the well-adjusted treatment in each case. To the future, the answer needed is probably: when is enucleation necessary and safe?

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Dr. Leonardo Oliveira Reis
Assistant Professor of Urology
University of Campinas, Unicamp
Campinas, São Paulo, Brazil
E-mail: reisleo@unicamp.br

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Association of hematuria on microscopic urinalysis and risk of urinary tract cancer

Jung H, Gleason JM, Loo RK, Patel HS, Slezak JM, Jacobsen SJ
Department of Urology, Kaiser Permanente Southern California, Los Angeles, California, USA
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Purpose: We determined the incidence of urinary tract cancer in patients with hematuria, stratified risk by age, gender and hematuria degree, and examined current best policy recommendations.