



The value of nephrometry scoring systems in prediction of conversion to radical nephrectomy in patients scheduled for nephron-sparing surgery

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Nephrometry scores such as PADUA (1) and RENAL (2) are helpful tools to evaluate the complexity of renal tumors, not only to estimate the risk of complications of partial nephrectomy (PN) (3,4) but also to predict the risk of conversion to radical nephrectomy (cNE) (5).

We are grateful for the comments by Ficarra *et al.* as well as Porpiglia and colleagues. Some of the points discussed need clarification.

First, we agree with Ficarra *et al.* that reasons of cNE should be reported in detail which we did in Figure 1 of our manuscript. Namely, these were hilar infiltration (n=12, 38.7%), multifocality (n=7, 22.6%), positive surgical margin (n=5, 16.1%), tumor size (n=3, 9.7%), bleeding (n=2, 6.5%), urinoma (n=1, 3.2%) and rupture (n=1, 3.2%).

Certainly, there are several factors such as performance status, comorbidities, preoperative renal function, etc. besides renal mass complexity that have to be taken into account when deciding whether PN is to be performed. We concur with Porpiglia and colleagues that the experience of the surgeon is an additional important factor for successful PN. In our cohort, the majority of patients were treated by experienced surgeons (≥ 100 procedures). Junior surgeons were always supervised by an experienced surgeon. Unfortunately, we were only able to adjust our multivariable models for two confounders to avoid

overfitting. Therefore, we decided to adjust for age and comorbidities as these variables are well established confounders in surgical literature. In our opinion, they are two of the most predominant parameters influencing clinical decision making. Further, we agree that the inclusion of a broader spectrum of preoperative variables in our multivariable models such as surgical experience would have been desirable and of interest. This could be done in a larger multicenter cohort of patients scheduled for PN.

Ficarra *et al.* stated that we did not use the proposed cutoff for highly complex tumors according to the initial RENAL score publication which is supposed to be ≥ 10 . However, Ficarra and colleagues missed that the aim of our study was not to use a predefined cutoff but rather to establish a cutoff value for cNE prediction based on our study population. In our paper, we discuss a possible clinical rationale for such a cutoff as its determination might be arguable. Most importantly, this rationale might be influenced by various factors: the surgical philosophy of the treating physician, an imperative indication for nephron-sparing surgery justifying a cutoff value with a high specificity or comorbidities representing a higher risk for unfavorable outcomes in case of elevated blood loss or prolonged surgery justifying a cutoff value with a high sensitivity. Finally, we chose to use

an arbitrary cutoff showing the lowest difference between sensitivity and specificity for prediction of cNE.

Furthermore, we disagree that patient selection for PN was too extensive. We involved all patients with renal masses scheduled for nephron-sparing surgery at our department relying on guideline recommendations (≤ 7 cm in dimension or imperative indication for nephron-sparing surgery). In our opinion, this represents a real-life setting. In addition, our analyses revealed a comparable volume of blood loss in cNE and PN patients and even lower postoperative complication rates in cNE patients which emphasizes that patients are not at any disadvantages due to unsuccessful initial PN. Therefore, it supports the decision to attempt PN even in advanced, difficult renal tumors. Moreover, we decided to include both robotic assisted and open approaches to avoid selection bias.

Regarding the study design we coincide with Porpiglia *et al.* that our study is not a randomized controlled trial but rather a prospective exploratory assessment of the association of conversion rates with nephrometry scoring systems in consecutive patients scheduled for PN within a predefined time period to account for selection and recall bias. The study design and ethical votum were obtained before the beginning of the study. Only patients scheduled for PN were integrated, score calculation was performed before surgery by urologic residents and board-certified radiologists blinded to each other's results.

Finally, we agree with Porpiglia *et al.* that the value of 3D models might be helpful for clinical decision making while planning nephron-sparing surgery.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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