

Platinum Priority

Reply from Authors re: Inderbir S. Gill. Towards the *Ideal Partial Nephrectomy*. *Eur Urol* 2012;62:1009–10

Target More Precise Artery, Target Less Ischemic Injury

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We are grateful for the opportunity to respond to the editorial comments presented by Gill [1]. We sincerely appreciated his comments and critiques of our work. As we know, improving functional outcomes is always the urologist's concern about nephron-sparing surgery. Limiting ischemia to the tumor area by clamping the segmental artery without affecting global kidney perfusion has become an important method to decrease warm ischemia (WI) injury [2,3]. We agree that it is the right direction in this field and that the promising technique should be more widely applied [1]. Now in our center, all patients who are candidates for partial nephrectomy have received surgery with precise segmental artery clamping, and it has become routine work. Although it takes more time and incurs more risk during intrahilar dissection, we believe it is worth the benefits for postoperative renal function. In addition, no major complications occurred during the intrahilar manipulation in our series, and this proved it safe and feasible [4].

Some recent literature shows that WI is no longer an essential factor in postoperative renal function; instead, remnant kidney volume and baseline kidney function serve the main roles [5]. However, it is still controversial. As shown by Gill, WI is a modifiable factor, whereas the kidney quantity and quality are largely surgically nonmodifiable [1]. For a given patient, the kidney quantity and preserved kidney parenchyma is certain before the operation. The only modifiable way is to minimize the WI injury. Update reviews also confirm that WI injury remains an important factor influencing postoperative renal function for nephron-sparing surgery [6,7].

On the issue of tables in our paper, although they are not so straightforward, we think they can provide important information for urologists. We tried to figure out whether there are factors that independently influence the postoperative renal function and estimated blood loss. Therefore, univariable and multivariable analyses are necessary. Single tumor characteristics such as size and growth pattern could not independently predict the outcomes [4]. When we could not get the accurate percentage of

preserved parenchyma, the target number became a reliable parameter. The number approximately reflects the comprehensive tumor characteristics, which independently related to renal function and blood loss.

Intraoperative verification of accuracy and effectiveness of segmental clamping is really difficult. The accuracy of angiography to predict the target arteries is 93.6% in our series [4]. Inadequate clamping still occurred in a small number of patients. We agree that angiography and visual inspection are sometimes inadequate. Color Doppler ultrasound can be a great help for examining the ischemic status of the tumor area. We have applied ultrasound on intraoperative monitoring.

We do not think that more clamping than Gill's group means overclamping in our series. Due to our precise clamping technique, the target arteries would be counted when they have no more bifurcation before entering the parenchyma. For instance, when two target arteries are feeding the tumor simultaneously, they may arise from one common stem. Clamping the common stem is adequate in practice while the clamped number is counted as two, according to our definition. The definition of the target artery may lead to the difference in the clamped number. Furthermore, the ischemic area after segmental clamping is a little wider than the tumor area. This is inevitable in most patients because the target artery has further bifurcation to form interlobar arteries within the parenchyma, one to feed the tumor and the other to the adjacent normal parenchyma. These interlobular arteries could not be isolated within the hilum. Therefore, ischemia of adjacent normal parenchyma to the tumor is inevitable, and the extension of the ischemic area depends on the individualized renal vasculature. However, our precise segmental clamping technique promises a minimal ischemic region.

Conflicts of interest: The authors have nothing to disclose.

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