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Abbreviations Used

PN = partial nephrectomy
RAPN = robot-assisted partial nephrectomy
SD = standard deviation
WIT = warm ischemia time

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Editorial Comment for Sandhu *et al.*

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There is no doubt that it is an ideal goal to reduce ischemia during partial nephrectomy for a renal mass. What is less certain is how much our efforts to reduce warm ischemia impact long-term renal function. Regardless of approach, partial nephrectomy is now most commonly performed in patients with two kidneys and normal renal function. In this scenario, it is likely that long-term renal function after a partial nephrectomy is driven by the amount of kidney removed and the baseline renal function of the patient.[1] While these are not modifiable factors, patient management based on this information is modifiable, and we must take into consideration patient and tumor characteristics and tumor biology in addition to technical improvements to our interventions to optimize patient care.

In the current Techniques in Endourology article, Sandhu and colleagues describe a nonischemic technique for the management of renal masses using a robot-assisted approach. In this technique, the surgeons use a combination of cautery, clamps, and clips to perform resection of a renal mass and obtain hemostasis. A careful review of the article identifies several key points. First, the surgeons performing this procedure had extensive experience with robot-assisted surgery and robot-assisted partial nephrectomy and did not commonly use this approach early on in their experience. Second, the surgical team was prepared to place a bulldog clamp if needed, and the bedside assistant was critical in the safe and effective performance of this surgery. Finally, the surgeons used electrocautery as a major component of hemostasis during the resection of the tumor.

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While similar techniques have been described for open partial nephrectomy,[2] the excellent results reported by the surgeons should be commended. For surgeons performing partial nephrectomy, the technique described should be included in the tool kit for managing renal masses. This technique, however, should clearly not be used for every renal mass and may not be as easily replicated by surgeons with a smaller surgical volume.

More crucial than ischemia is whether we are treating every patient's small renal mass appropriately. To do this, we must consider patient factors (comorbidity, competing medical problems), tumor factors (tumor location, depth, proximity to the sinus, etc), and tumor biology. All of these factors are accessible for decision making before the patient undergoes a procedure. Several tools now exist to assess the risk of dying from a small renal mass that takes into account the size of the tumor and patient age.[3] This can help a surgeon decide whether a patient should be observed or treated. In addition, percutaneous renal mass biopsy has excellent sensitivity and specificity to allow for the identification of the roughly 25% of patients with benign histology who may not need intervention at all.[4] Avoiding intervention in those patients who do not need it beats reducing ischemia any day and, similar to other series, this series included 21% of patients with benign histology who may have benefited more by not having an operation at all.

Finally, tumor complexity scores such as R.E.N.A.L. (radius; exophytic/endophytic; nearness; anterior/posterior; location) nephrometry have been shown to correlate well with perioperative outcomes, and this information is readily available on preoperative imaging.[5] Nephrometry score can likely be very helpful in determining which patients need renal hilar clamping or not during partial nephrectomy. In cases of low tumor complexity, surgeons may feel comfortable using the described technique. For more complex tumors, however, surgeons may need to be prepared to use renal hilar clamping and a variety of other hemostatic options to achieve the goal of surgical excision with a negative margin while minimizing ischemia and blood loss. It is not helpful to eliminate ischemia if the surgeon cannot see the margin adequately or extensive cautery is needed. One of the advantages of robot-assisted partial nephrectomy is the magnified detail that allows a surgeon to distinguish normal parenchyma from tumor or identify renal sinus and collecting system entry for repair.

In the end, physicians caring for patients with renal masses must consider multiple factors in the best treatment of their patients. Eliminating or reducing ischemia represents a piece of the overall medical decision making for our patients with renal masses, but the most critical decisions likely happen before the patient comes to the operating room.

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