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For forty years, the gold standard for treating a single, small tumor in the kidney has been to remove the entire kidney. A retrospective study, which appears in the September issue of *The Lancet Oncology*, by urologists at Memorial Sloan Kettering Cancer Center (MSKCC) and their colleagues, suggests that this practice needs to be re-evaluated. Researchers add that with advances in imaging, almost 70 percent of [kidney cancer](#) patients have their tumor detected at a very small size (less than 4 cm), allowing surgeons to perform less radical surgery with superior results.

The study revealed that patients with two otherwise healthy kidneys who underwent kidney-sparing surgery (partial nephrectomy) to remove a small cancer developed chronic kidney disease at a rate one-third lower than patients whose entire kidney was removed (radical nephrectomy). The three-year probability of staying free of chronic kidney disease was 80 percent for the partial nephrectomy patients compared with 35 percent for patients who underwent a radical nephrectomy. In fact, radical nephrectomy was shown to be a significant risk factor for developing chronic kidney disease.

“The results of our study demonstrate that prior to surgery, the baseline kidney function of patients with small kidney tumors was significantly lower than previously recognized,” explained Dr. William C. Huang, the study’s first author. “Patients who undergo a radical nephrectomy, the most common treatment for small kidney tumors, are at significantly greater risk for the development of chronic kidney disease after surgery compared with those who undergo a partial nephrectomy.”

The retrospective study of 662 patients at MSKCC showed that up to 26 percent of the patients had pre-existing chronic kidney disease before undergoing surgery to remove a small tumor (less than 4 cm) from the kidney. In addition, those patients who had the entire kidney removed were more than twice as likely to develop chronic kidney disease.

Although partial nephrectomies account for 30 to 65 percent of all kidney surgeries performed in tertiary care centers in the United States like MSKCC, the latest analysis from the Nationwide Inpatient Sample reported in the journal *Urology* indicated that 92.5 percent of all kidney cancer surgeries in the United States from 1998 to 2002 were radical nephrectomies. Statistics from the Department of Health in England for the same period reflected a similar trend. In 2002, 96 percent (2,671) of kidney cancer surgeries performed in England were nephrectomies and 4 percent (108) were partial nephrectomies.

“Evidence has accumulated from our Center and elsewhere that partial nephrectomy provides effective local tumor control and equivalent survival rates to that of radical nephrectomy for small tumors,” said [Dr. Paul Russo](#), the study’s senior author. “However, while approximately 70 percent of kidney tumor operations at MSKCC are partial nephrectomies, national databases from the United States and abroad suggest that greater than 80 percent of patients may be unnecessarily undergoing the more radical surgery to remove the entire kidney, even for small renal tumors. One explanation may be that partial nephrectomy is a more complex surgical procedure.”

A number of risk factors for chronic kidney disease, such as diabetes, hypertension, and smoking, are commonly found in patients with kidney tumors, and may account for why the majority of these patients are at risk for developing chronic kidney disease following a radical nephrectomy. Chronic kidney disease can result in the loss of kidney function, sometimes leading to kidney failure. Complications associated with chronic kidney disease include [anemia](#), hypertension, malnutrition, and neuropathy, as well as a reduced quality of life, and even heart disease and death.

“Our study clearly demonstrates, for the first time, the serious effects on kidney function and the high risk of chronic kidney disease when an entire kidney is removed for a small cancer. Chronic kidney disease leads to an increased risk of cardiovascular events, hospitalizations, and even death,” said [Dr. Peter T. Scardino](#), Chairman of the Department of Surgery and co-author of the study. “By removing only the cancerous part, we are much more likely to preserve a patient’s normal kidney function and avoid the long-term consequences of chronic kidney disease.”

The study’s co-authors are Ganesh V. Raj, MD; Angel M. Serio, MS; Mark E. Snyder; and [Andrew J. Vickers, PhD](#) of MSKCC and Andrew S. Levey, MD, of Tufts-New England Medical Center. Funding was provided in part, by a grant from the National Institutes of Health.



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