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Surgical Strategies

BY KAREN PATTERSON

For the growing number of kidney tumors detected early—often before they cause symptoms—surgical removal is the treatment of choice. Especially for the smallest of tumors, those under 4 centimeters, “surgery is a highly curative procedure,” says Mike Nguyen, MD, director of minimally invasive urologic surgery and an assistant professor of clinical surgery/urology at Arizona Health Sciences Center.

For decades, the standard operation involved removal of an entire kidney, known as a nephrectomy (or radical nephrectomy, where the adrenal gland, lymph nodes, and other tissue are also removed), through an open incision. While this procedure can eliminate the cancer, it involves cutting through flank muscles, and perhaps paring back a rib, to reach the kidney, sometimes leaving a patient with chronic pain or a hernia at the incision site.

In recent years, the same radical procedure has been performed laparoscopically, a minimally invasive technique using smaller “port” incisions and the aid of a small video camera. This surgery has resulted in faster recovery, less pain, and comparable cancer control. Nevertheless, loss of a kidney can be dangerous for patients with conditions such as diabetes or hypertension, which strain kidney function.

Another recently developed surgical alternative, known as partial nephrectomy or nephron-sparing surgery, in which a portion of the organ is removed, can help spare kidney function. The procedure is an option that depends on tumor size and location. “If you can take out the cancer and obtain what’s called a negative margin—basically not leaving any cancer behind—the cure rate is roughly equivalent to taking out the whole kidney,” Nguyen says. “You leave the patient with the remainder of the kidney to provide renal function.” Partial nephrectomy can be performed through an open incision or laparoscopically.

The newest surgical option is robot-assisted laparoscopic surgery, using a device called the da Vinci Surgical System. The device gives the surgeon a stable camera platform, allows three-dimensional visualization of the surgery, and is highly manipulable. “Laparoscopic surgery is like driving a manual transmission; robotic surgery is like driving an automatic transmission,” Nguyen explains. “You’re still going to get to the same place, but robotic surgery makes some of the steps easier.”

Other treatments for small, localized kidney cancers include cryoablation (freezing a tumor to destroy it) and radiofrequency ablation (heating the tumor). Many urologists favor cryoablation, Nguyen says, and research suggests

recurrence rates may be lower with cryoablation than with radiofrequency ablation. Each can be easier for the patient to endure, and the surgeon to perform, than nephrectomy or partial nephrectomy. But because neither is as effective as surgery, ablation typically is reserved for patients with other medical conditions that could make surgery difficult.

Meanwhile, research is exploring whether there is any potential benefit in just carefully monitoring small tumors, especially in patients with complications, because the tumors usually grow slowly and might never actually cause harm. But given that there remains a risk of metastasis, most practitioners advocate active treatment, Nguyen says. “We’re still trying to figure out how much treatment we should do, without overdoing that treatment.”