

Radical Nephrectomy

(Surgical Removal of a Kidney)

Dear patient, if you are reading this, then you were likely diagnosed with a kidney abnormality such as a solid tumor, a suspicious cyst or another condition that warrants the removal of a kidney. This type of surgery is called a “radical nephrectomy.”

There are various methods of doing this procedure. In the past, the only approach was to make a long cut on the side of the belly to remove the kidney. Then in the 1990’s, we began doing these procedures laparoscopically, using small cuts in the belly with “chopstick” type of instruments and a long telescope-like camera. In the early 2000’s a new instrument came into play called the DaVinci robot that allows for wrist-like movements of the thin instruments that are placed through small cuts in the belly and are controlled by the surgeon with joysticks.

The robotic surgery allows for a high definition 3-D view of the inside of the belly improving precision of the operation. Currently, Broward Urology Center offers both laparoscopic and robotic approaches in removing a diseased kidney. Drs. Chenven and Gorbatiy spent an extra 1-2 years, after their residency training, in “exclusive” fellowships in minimally invasive surgery. They have operated on several hundred patients with these types of techniques over the past two decades.

This guide is intended to explain how the procedure is done, how to prepare for it and what to expect after the procedure.

What are the Kidneys?

The kidneys are a pair of organs located towards the back of the belly (flank area). Each is about the size of a fist. The kidneys are essential organs, which filter the toxins from the blood and balance the water and salts in the body. As the kidneys filter blood, they create urine, which collects in a funnel-shaped structure called the “pelvis of the kidney” and leaves the kidneys down tubes called “ureters” to finally reach the bladder. The kidneys are essential to life.

What are the Reasons to Remove a Kidney?

Surgical removal of a kidney is a serious procedure, thus, the reasons to have that done are either life threatening or are causing people significant discomfort.

The most common reason to remove a kidney would be a large kidney tumor. See below for more information. However, there are non-cancer reasons as well that include a poorly functioning kidney, chronically infected kidney, or a kidney that has been damaged badly in a physical trauma.

What is a Kidney Tumor?

A kidney tumor, also referred to as a “mass” or “lesion” is simply a solid growth in the kidney. There are growths in the kidney that may be full of liquid (resembling a pimple) that are referred to as kidney cysts. The majority of kidney cysts are benign and in most cases do not require any intervention; however, solid tumors typically need to be addressed. Some cysts may have solid elements and thus be suspicious for cancer so these may need to be addressed as well.

Most kidney tumors are malignant, which means they are a kidney cancer. On average, 80% of tumors about 1.5 inches in size are malignant while 20% of those are benign (non-cancerous) tumors.

Depending on the size and location, the tumor may be removed while sparing the rest of the kidney ([partial nephrectomy](#)) or it may require a total kidney removal.

How is the Radical Nephrectomy Surgery Done?

A nephrectomy means that a surgeon removes the entire kidney. This surgery may be done these days through small holes in the belly (laparoscopically) as well as with the assistance of a hand (“hand-assisted”) or even the DaVinci “robot” machine that allows for the surgeon to control small laparoscopic instruments with joysticks. The surgeon must control the arms of the robot and the laparoscopic instruments attached to them. The robot does NOT function independently on its own. In rare cases, the surgery may need to be done with a traditional, large open incision.

The steps of the operation:

1. Patients are put under general anesthesia in the operating room and are given IV antibiotics
2. A catheter (tube) is placed to drain the bladder and then patients are placed on their side so that the kidney that is being operated on is up toward the ceiling
3. Patients are then secured to the bed, and cushions are placed on any pressure points

4. After cleaning the skin, we make small holes in the belly to insert a camera and instruments inside.
5. The inside of the belly is examined and the intestines are moved away to expose the kidney.
6. The blood vessels of the kidney (artery and vein) are then identified and sealed with a stapler or clipping device that disconnects the kidney from the body.
7. Finally the tissues around the kidney as well as the drainage tube are disconnected from the kidney and finally the kidney is then placed into a plastic bag.
8. One of the small incisions is made large enough to remove the bag with the kidney and all the belly cuts are closed with stitches. All of the skin cuts are closed with superglue.

How Long Does the Operation Take?

The operation takes 2-3 hours to complete. In cases where patients are obese, had previous belly surgeries, the tumor is large, the anatomy is difficult or there are multiple tumors, the procedure may take longer.

What is the Recovery After the Operation?

Most patients stay in the hospital for 1 to 2 days. The goal is to get you out of the hospital as fast as possible, when you are safe to go, so that you may avoid catching any hospital related infections. The most important step to a speedy recovery is to move as much as you can. The more you move, the faster the bowels wake up, and the less likely you will get blood clots in the legs.

The following is the typical hospital course:

Immediately after surgery

1. You will wake up in the recovery area called the "PACU" (Post Anesthesia Care Unit) with a tube draining the bladder. You will also have squeezing/pumping devices on your legs to prevent blood clots. Blood work will be done. A nurse will be by your side addressing any usual discomfort you may have such as pain, nausea, etc. and keep an eye on your recovery from anesthesia.
2. Once you are fully awake, you will be moved to your hospital room. You will be allowed to have some clear liquid fluids at first and if you are hungry, you may have a very light meal.
3. You will be encouraged to get up in bed and at least sit up.
4. You will be encouraged to take deep breaths and clear up your lungs with coughing.
5. Ask for pain medications so you may be able to move around. Don't use pain medications for sleep, but instead take pain medicines for pain.

Day #1 after surgery

1. Early in the morning, the catheter draining the bladder will be removed so that you may be able to urinate on your own.
2. Blood tests will be done in the morning
3. You will be served a light meal for breakfast and a normal diet for lunch
 - a. Eat as much as you want, don't force yourself to complete a meal
 - b. It is common to have bloating and gassiness after the surgery
4. Continue to use the incentive spirometer (a device that helps you gauge how well you are breathing) to take deep breaths and continue to get out of bed and walk around as much as possible.

Most patients are ready to go home when they have:

- Passed gas
- Pain is well controlled with pills
- There are no signs of an infection
- Blood pressure and blood tests are good

When the doctor deems you to be safe to go home, your nurse will remove the IV from your arm and provide you with discharge instructions as well as prescriptions which typically include a pain medication and a stool softener.

Most patients report that they feel like they are back to "normal" at about 2-3 weeks after the operation. Typically, patients feel that their belly is a bit swollen for a few weeks. The incisions may have some bruising. Male patients may feel some testicular discomfort on the same side of the kidney that was operated on. Some patients may feel like their bowels are not moving normally for a little while after surgery and many report feeling more tired for a few weeks.

What are the Risks of the Radical Nephrectomy Surgery?

1. Bleeding - During the surgery most patients have some bleeding from small blood vessels that may be feeding a tumor or the kidney itself but this typically does not require a transfusion. Delayed bleeding (bleeding that occurs a few hours to a few days after surgery) occurs very rarely. Rarely patients may have some mild bleeding just underneath the skin which may result in a hematoma (a small collection of blood) or just some bruising.
2. Infection - such as a urinary or skin infection.
3. Injury to the surrounding organs (intestine, spleen, liver, gallbladder, major blood vessels)

4. Conversion from Robotic or Laparoscopic to an Open Surgery (bigger cut on the belly)
5. Conversion from a partial to a total/complete kidney removal
6. Anesthesia-related heart and/or lung problems
7. Decline in overall kidney function - depends on how well the other kidney works
8. Positive Margins - when a small amount of tumor is left behind in the area of the kidney.
9. Need for further treatments such as chemotherapy, radiation
10. Risk of cancer recurrence
11. Risk of equipment malfunction resulting in longer surgery or change in the surgical approach.

What are the Alternative Treatment Options?

The treatment options for solid kidney tumors besides a radical nephrectomy (starting with the least aggressive to the most aggressive option) include:

Active Surveillance - close monitoring with repeat imaging of the kidneys over time; Surveillance may be done with or without a diagnostic biopsy. This is usually reserved for very small kidney masses or for patients who are too ill for surgery.

Kidney Tumor Embolization - certain benign tumors (like Angiomyolipomas) are treated with this procedure where the Interventional Radiologist is able to cut off the blood supply to the tumor.

Kidney Tumor Ablation - either through the back (percutaneously) or laparoscopically (small belly opening), a special needle is used to penetrate the tumor and either burn it or freeze it to death.

Partial Nephrectomy - surgery to cut a tumor out of the kidney while trying to preserve the rest of the normal kidney is reserved for smaller kidney tumors that are in a safe location.

Pre-Operative Instructions: Radical Nephrectomy

If you are currently awaiting a radical nephrectomy, it is essential for your own safety and for the success of your operation that you carefully read and observe these instructions.

Preparation Prior to Surgery

Medications

Ten (10) days before surgery please STOP taking any

- Aspirin
- NSAID's (non-steroidal anti-inflammatory drugs) such as Ibuprofen, Motrin, Aleve, etc.
- Vitamin E, Fish Oil and any other blood thinners
- Herbal medications and multivitamins.

If you are on Plavix (clopidogrel), Coumadin (warfarin) or any other prescribed blood thinner, make sure you mention this to the doctors so we could have a clear permission from your primary doctor or cardiologist to stop those medications safely prior to surgery.

Take your usual doses of heart, thyroid, and asthma medications on the morning of surgery with a tiny sip of water. If you are diabetic and take medication, do not take them on the morning of surgery. If you take insulin, only use half the normal dose on the morning of surgery.

Get Your Body Prepared for Surgery

In the days leading up to surgery, eat a healthy diet to help the body heal faster.

- Please be more active prior to surgery, even walking 5 or 10 thousand extra footsteps in a day will increase your stamina and help you bounce back much faster after any operation.
- Losing weight (even 5 pounds) helps patients recover faster as it makes the anesthesia easier to administer.
- Quit, or at least cut down on smoking, alcohol or recreational supplements.

- Stay positive. An optimistic outlook gives you energy toward a rapid recovery.

The Day of Your Procedure

- Please don't drink or eat **anything** for 8 hours prior to the procedure
- Take ALL your blood pressure and heart medications as usual with just a sip of water
- For other medicines, please check with your primary care doctor prior to surgery
- What to Bring to the Hospital
 - If you have the disks of CT scans/MRI scans of your abdomen, please bring them with you for the operation.
 - A pair of loose-fitting pants, like sweatpants.
 - Brief-style underwear that is 1 to 2 sizes larger than you normally wear.
 - Sneakers that lace up. You may have some swelling in your feet so lace up sneakers can accommodate this swelling.
 - If you have a history of sleep apnea and use a CPAP, then bring it to the hospital.
 - Your cell phone with a charger cord/plug.
 - Your Health Care Proxy and Living Will forms, if you have them.
 - A case for your personal items, such as eyeglasses, hearing aid(s), dentures, toothbrush, shaving kit, and religious articles.
 - This handout as a reference.
 - Your Driver's License for ID and insurance cards.
 - List of all your current medications.
- All jewelry usually needs to be removed from your body before the operation so it is best left at home.
- Do not wear makeup on the day of surgery.
- Do not wear nail polish.
- Do not wear your contact lenses.
- Shower the night before or the morning of surgery.

Recovery at Home

- Please make an appointment to see your primary care doctor as soon as you get out of the hospital as you may need to have some medications (typically blood pressure meds) adjusted after surgery.
- Continue to stay active at home after surgery with regular daily walking.
- Continue to use the incentive spirometer (breathing device) given to you after surgery to take deep breaths and help prevent pneumonia for up to a week after surgery.
- All the cuts on the belly are covered with superglue that will eventually peel off after 1-2 weeks.
- You may shower once you get home after surgery.
- You may NOT use the bathtub or go in a pool until the skin is completely healed which may take a few weeks.

- Heavy lifting (>10-20 pounds) is discouraged for the first 6 weeks after surgery to prevent from getting a hernia.
- It is common for the stitches underneath the skin to make the cuts feel firm for even as long as a year from surgery, but eventually they soften up.
- Bruising is often seen around the incisions and will go away on its own.
- Rarely, the cuts may open up and drain some fluid. Keep the incision clean by showering daily with soap and water. If there is some drainage, keep a clean gauze or a band aid over the incision and notify your urologic surgeon.
- If you see redness that is spreading around the incision, please let the doctor know as this may be a sign of a wound infection.
- You may maintain your usual diet at home, unless told otherwise by the doctors prior to your discharge from the hospital.
- Please contact the doctor if you're experiencing fevers (>101 F), shortness of breath, chest pain, inability to pass any gas, vomiting, swelling in one leg, dizziness, blood in the urine or sudden and severe abdominal or flank/back pain.
- Most patients are seen at our office 1-2 weeks after surgery. Please call the office at **954-463-6408** to schedule the appointment.

We hope these instructions are useful to you. If there are any questions not covered by the instructions, please contact us at the above phone number. It has been a pleasure working with you to resolve your problem.