

# **Laparoscopic Nephrectomy for Patients with Polycystic Kidney Disease (PKD)**

**Department of Urology  
Division of Endourology**

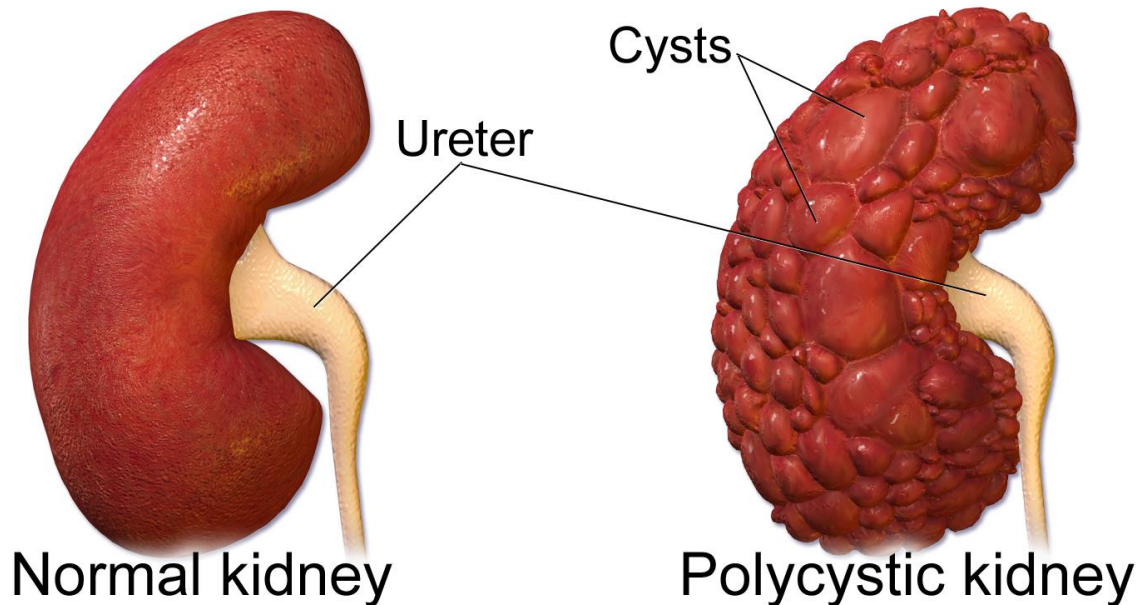


## Table of Contents:

<b>Polycystic Kidney Disease</b> .....	<b>3</b>
What are the symptoms of Polycystic Kidney Disease?.....	3
<b>Laparoscopic Nephrectomy surgery</b> .....	<b>4</b>
What is laparoscopy surgery?.....	4
What are the risks of Laparoscopic Nephrectomy?.....	4
What should I expect before surgery?.....	5
What to expect on the day of Surgery?.....	5
What happens during the surgery?.....	6
What can I expect after surgery?.....	7
How can I avoid complications while in the hospital?..	7
When will I be ready to leave the hospital?.....	7
<b>Care for myself at home</b> .....	<b>8</b>
How will I manage my pain?.....	8
What are my diet instructions?.....	10
What are my activity instructions?.....	10
When should I call my doctor?.....	11
When will I follow up with my surgeon?.....	11
<b>Frequently Asked Questions</b> .....	<b>12</b>
<b>Medications Diary</b> .....	<b>13</b>

## Polycystic Kidney Disease

Polycystic Kidney Disease (PKD) is a genetic condition that leads to the development of clusters of cysts (fluid-filled sacs) within your kidneys. Over time the kidneys enlarge and may lose function due to the growth of the cysts. In some patients the condition may progress to kidney failure and they may need dialysis or a kidney transplant.



[Polycystic Kidney.png](#) by BruceBlaus [CC BY-SA 4.0], from Wikimedia Commons

### What are the symptoms of Polycystic Kidney Disease?

The large polycystic kidneys may cause symptoms that significantly impact your quality of life. When the large kidneys start pushing on other organs you might have a feeling of fullness in your belly (abdomen), shortness of breath, and inability to eat normal-sized meals.

Other symptoms of polycystic kidney disease include: flank pain (dull pain or discomfort in your upper abdomen or back and sides), recurrent kidney infections, or blood in the urine.

If you don't have symptoms, treatment is not required, but if these symptoms are significantly impacting your quality of life, you and your doctor should consider surgery.

If your kidneys are not working and you either have a kidney transplant or are on dialysis, the most effective management is removal of one or both of your kidneys.

## **Laparoscopic Nephrectomy surgery**

### **What is laparoscopic surgery?**

In the traditional open surgery method, the surgeon makes a long incision in the abdomen (belly) to allow direct access to the organs. In minimally invasive surgery, also called "laparoscopy" or "laparoscopic surgery" the surgeon cuts a few ½ (half) inch holes and uses them to insert a camera and special tools. The camera sends images to a monitor to guide the surgeon during the surgery. The benefit of laparoscopy surgery is that the recovery time in the hospital after the surgery often is shorter.

### **What are the risks of Laparoscopic Nephrectomy?**

- The risk of major complications is quite rare and occurs in less than 5 in 100 patients (5%). These risks include:
  - Bleeding to the level that requires a blood transfusion
  - Injury to other abdominal organs that requires repair, including the colon, bowel, stomach, liver, spleen, diaphragm, major blood vessels, nerves, pancreas, and muscles.
  - Conversion to an open surgery - if we are concerned about your safety or the surgery cannot safely be performed via a laparoscopic approach, you may end up having open surgery. This means that the surgery will be done with one larger incision rather than a few smaller ones.

- Admission to the Intensive Care Unit (ICU). If there are concerns about your safety after the surgery, you may be admitted to the ICU for close monitoring and management.
- Unexpected return to the operating room - if a complication occurs that requires surgical correction, we may have to take you back to the operating room to address this. An example of this would be if your abdominal wall separates and we have to repair it right away.
- Ileus - your bowel can temporarily “go to sleep” after surgery, which can lead to nausea, vomiting, and delay in eating regular food.
- Although major complications are rare, minor complications are more common, and occur in up to 1 in 4 patients (25%). These include:
  - Wound infection requiring antibiotics
  - Prolonged hospital stay
  - Prolonged or persistent pain
  - Minor nerve injuries that lead to numbness and/or tingling
  - Long-term wound issues including scarring and hernia

#### **What should I expect before surgery?**

- You will have lab work, EKG, and maybe a chest x-ray to ensure your safety during the procedure.
- If you have not had a CT or MRI of your abdomen and pelvis already, you will need one for surgical planning.
- You may have an appointment at Michigan Medicine Pre-Operative Clinic. They will ensure that you are in the best form for surgery.

#### **What to expect on the day of Surgery?**

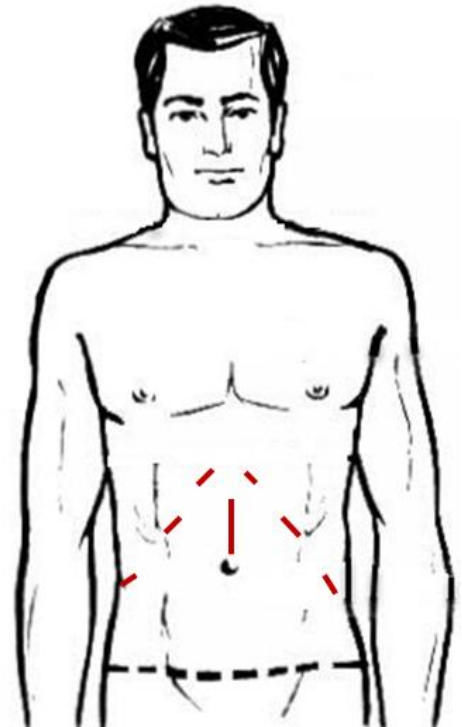
- Arrive at the Information Desk on the first floor of University Hospital at the time requested. Please allow for time to register and change your clothing. Hospital staff will help and escort you to the pre-operative (pre-surgery) area.

- In the pre-operative area a few activities will happen:
  - the preoperative nurse will review your chart and ask you questions. This is called “an intake”.
  - You will meet your surgical team and the anesthesia team. The anesthesia team is responsible for putting you to sleep during the surgery so you don’t feel pain.
  - Our staff will confirm your consents for surgery and answer any questions you might have. The surgical team will also put a mark on you to confirm the side(s) of surgery.
  - The anesthesiologist may decide to place an epidural pain catheter in the pre-operative area. If the anesthesiologist feels it is safe to place an epidural pain catheter, it is strongly encouraged as it will help with post-operative pain. The anesthesia team will talk you through the entire procedure. If the anesthesiologist cannot place an epidural pain catheter, you will receive a different pain control regimen during and after surgery.

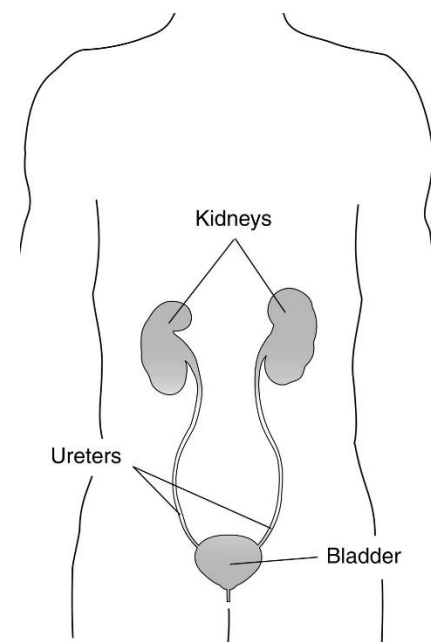
When the pre-surgery work is complete our staff will take you to the Operating Room, where the surgery will be done.

**What happens during the surgery?**

- The anesthesiologist will place you under general anesthesia to put you into a deep sleep and block pain. During this time, your breathing will be assisted by a ventilator. You will receive IV antibiotics to minimize the risk of infection.
- Once you are under anesthesia, you will be carefully positioned on your side for the procedure. If the surgery is for both kidneys, we start on the side that is causing more symptoms.



- The surgeon will make a 3.5 inches (9 centimeter) vertical incision near your belly button. They will also make a few additional small incisions on the side of kidney removal. (see illustration)
- The surgeon will insert different instruments through the incisions to free the entire kidney from the tissue around it. The surgeon will seal the ureter (tube that transports urine from the kidney to the bladder) near the kidney. They will seal the major blood vessels to the kidney with a medical stapler.
- Once the kidney is freed but still in the abdomen it will be placed in a bag. The surgeon will manually drain the kidney cysts in order to decompress the kidney so it can fit through the incision. The bag prevents cyst fluid from draining into the abdomen. The kidney area is then washed with sterile fluid.
- If the surgery is for both kidneys, our team will then reposition you and do an identical procedure on the other side.
- At the end of the procedure, the surgeon will close the incisions with absorbable suture and either skin glue or sterile bandages.
- The team will also place a urethral catheter in your bladder. A urethral catheter is a tube that is passed through the urethra and into the bladder to drain urine.
- The duration of the surgery depends on the complexity of your case, but on average these surgeries last between 4-5 hours. This includes going to sleep, positioning, and waking up.



© NIDDK

### **What can I expect after the surgery?**

You will stay in the hospital for 2-3 nights. Your diet will slowly advance from soft to solid foods. If you have an epidural it will be taken out approximately 2

days after surgery and you will transition to oral pain medication. Your urinary catheter is typically removed after you no longer need your epidural.

### **How can I avoid complications while in the hospital?**

- Take several walks every day. This will minimize the risk of blood clots as well as nausea and vomiting. Your goal is to take 6 walks per day, and spend a good portion of the rest of the day sitting in a chair, rather than lying in bed.
- Use the incentive spirometer provided by the nursing staff. This breathing machine allows filling of the lungs and prevents a lung infection (pneumonia) and fevers. Take the spirometer home with you.

### **When will I be ready to leave the hospital?**

- You will be ready to go home when you can:
  - Tolerate regular food - we do not expect you to have a strong appetite, but we need to see that you can eat a little food without vomiting. The ability to drink liquids, primarily water, is critical while your appetite returns.
  - Pain control - we do not expect that you be pain-free, but your pain should be relatively well-controlled with pain medication.
  - Walk - if you were able to walk before surgery, we must make sure you are able to be steady on your feet before you are safe to leave. Walking after surgery is very important as it reduces your risk of pneumonia, blood clots, and gastrointestinal (digestive system) issues.

Your doctor will make the decision for discharge based on the above criteria and your safety. If there is a high chance that you will have a complication at home, we will keep at the hospital for as long as you need to be monitored. If you meet the criteria above, it is safer for you to be at home rather than in the hospital. Shorter hospital stays can prevent hospital complications such as



infections. You will also get better sleep and your body will recover better than if you stay in the hospital too long.

## Caring for myself at home

### How will I manage my pain?

The best strategy for controlling your pain after surgery is **around the clock** pain control with Tylenol (acetaminophen) and Motrin (ibuprofen or Advil). “Around the clock” means taking medications on a set schedule day and night. **Alternating** these medications allows you to maximize your pain control. In addition to Tylenol and Motrin, you can use heating pads or ice packs on your incisions to help reduce your pain.

How will I alternate over-the-counter pain medication?

You will take a dose of pain medication every three hours:

- Start by taking 650 mg of Tylenol (2 pills of 325 mg)
- 3 hours later take 600 mg of Motrin (3 pills of 200 mg)
- 3 hours later take 650 mg of Tylenol
- 3 hours after that take 600 mg of Motrin.

Example - if your first dose of Tylenol is at 12:00 PM this would be your schedule for the day:

Time:	Dose:
12:00 PM	Tylenol 650 mg (2 pills of 325 mg)
3:00 PM	Motrin 600 mg (3 pills of 200 mg)
6:00 PM	Tylenol 650 mg (2 pills of 325 mg)
9:00 PM	Motrin 600 mg (3 pills of 200 mg)
Continue alternating every 3 hours	

Follow this schedule around-the-clock for at least 3 days after surgery, or until you feel that it is no longer needed.

What about prescription pain medication?

You will receive 25 or less opioid (narcotic) pain tablets for pain relief at home. Take the opioid only when your pain is severe and prevents you from moving around. You can take it in addition to the over-the-counter medications schedule described above, or you can replace one of the over-the-counter doses with a dose of the opioid. Make sure you follow the amount and schedule your doctor ordered in the opioid prescription. Use the table on the last page of this handout to keep track of the medications you are taking. Your goal should be to be off opioid pain medication within 3 days of discharge. To learn more about taking opioids safely visit:

<http://www.med.umich.edu/1libr/PainSteeringCommittee/TakingOpioidsSafely.pdf>

### **Important**

- **Do not take more** than 3000mg of Tylenol or 3200mg of Motrin in a 24-hour period. If you take an opioid, check to see if it contains acetaminophen and add the amount to your daily intake.)
- **Do not take more** of the opioid medication than what your doctor prescribed.
- **Do not drink alcohol or drive** while taking an opioid pain medication.

### **What are my diet instructions?**

Return to your same diet as before surgery. Taking smaller portions and eating more frequently during the day may help in transitioning to your regular diet (6-8 small meals per day).

If you take an opioid pain medication take steps to prevent constipation.

- Drink plenty of water and caffeine-free fluids
- Eat foods high in fiber (such as fruits and vegetables)
- Take a stool softener such as Colace®

If you continue to have constipation start taking Miralax® 1 cap daily and increase until you see results.

### **What are my activity instructions?**

- Do not lift anything greater than 5 - 10 pounds for 6 weeks.
- Avoid strenuous activities such as vacuuming, lifting children and groceries, doing laundry, moving furniture, mowing lawns and sports activities.
- Do not drive until your first post-op visit.
- You may climb stairs in moderation.
- Walk as much as you are able. Walking is the only exercise allowed during the first 6 weeks after surgery.
- Resume sexual activity as discussed at your first post-op visit.

### **When should I call my doctor?**

Call if you have any of the signs and symptoms that may indicate an infection:

- Temperature above 101.5°F.
- Significant increase in wound pain or discomfort that is not relieved with pain medication.
- Excessive redness, swelling, or drainage from the incision sites.
- Incisions that begin to open.

You should also call if you have any of these signs or symptoms:

- Chills with sweats
- Profuse (excessive) sweating
- An overall feeling that you are heading in the wrong direction

Your first step is to call the clinic (see contact information below) but if you are not able to reach a nurse or doctor within 60 minutes, **go to the Emergency Room.**

What is the contact information for the clinic?

- During business hours between 8 a.m.- 5 p.m. Monday-Friday, call (734) 936-7030

- After 5 p.m. or on weekends, contact the On Call Urologist at: (734) 936-6267.

### **When will I follow up with my surgeon?**

Your surgeon will see you between 2-4 weeks after surgery to see how you are doing, check your incisions, assess for any problems, and go over the pathology report. Although in most cases the pathology report is consistent with polycystic kidney disease, there are rare cases where we find a kidney cancer that requires additional follow-up.

If everything is going well at that time, you will not need further follow up appointments, but feel free to contact your surgeon at any time with any issues.

### **Frequently Asked Questions**

- *How big are my kidneys?*

Everyone's polycystic kidneys are different sizes. We do not measure them in the operating room, but the pathologist will measure them and this information will be part of the pathology report. On average, each kidney weighs between 3-8 pounds, but keep in mind that we decompress the kidney significantly before giving it to the pathologist.

- *Can the surgeon take pictures of my kidneys in the operating room?*

Our priority in the operating room is your safety. The surgeon will attempt to entertain any requests for pictures, however this is not always feasible.

- *Is there any risk to my kidney transplant?*

Your kidney transplant is located in your pelvis in a separate compartment of your body. Although your polycystic kidneys can often be large enough to be near the transplant, there is really no risk of direct injury to your renal transplant.

Disclaimer: This document contains information and/or instructional materials developed by Michigan Medicine for the typical patient with your condition. It may include links to online content that was not created by Michigan Medicine and for which Michigan Medicine does not assume responsibility. It does not replace medical advice from your health care provider because your experience may differ from that of the typical patient. Talk to your health care provider if you have any questions about this document, your condition or your treatment plan.

Author: Sapan N. Ambani, MD  
Plain language review: Ruti Volk, MSI, AHIP

Patient Education by [Michigan Medicine](#) is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International Public License](#). Last Revised 1/4/2019

## Pain Medications Diary

<b>Day 1</b>					
Time	Name of Medication	Number of pills taken	Amount of Acetaminophen	Pain Level	Comments
AM PM					
AM PM					
AM PM					
AM PM					
AM PM					
AM PM					
AM PM					
AM PM					
Total Daily amount of Acetaminophen Do not take more than 3,000 mg per day					

<b>Day 2</b>					
Time	Name of Medication	Number of pills taken	Amount of Acetaminophen	Pain Level	Comments
AM PM					
AM PM					
AM PM					
AM PM					
AM PM					
AM PM					
AM PM					
AM PM					
Total Daily amount of Acetaminophen Do not take more than 3,000 mg per day					

<b>Day 3</b>					
Time	Name of Medication	Number of pills taken	Amount of Acetaminophen	Pain Level	Comments
AM PM					
AM PM					

AM PM					
AM PM					
AM PM					
AM PM					
AM PM					
AM PM					

Total Daily amount of Acetaminophen  
**Do not take more than 3,000 mg per day**

<b>Day 4</b>					
<b>Time</b>	<b>Name of Medication</b>	<b>Number of pills taken</b>	<b>Amount of Acetaminophen</b>	<b>Pain Level</b>	<b>Comments</b>
AM PM					
AM PM					
AM PM					
AM PM					
AM PM					
AM PM					
AM PM					
AM PM					

Total Daily amount of Acetaminophen  
**Do not take more than 3,000 mg per day**

<b>Day 5</b>					
<b>Time</b>	<b>Name of Medication</b>	<b>Number of pills taken</b>	<b>Amount of Acetaminophen</b>	<b>Pain Level</b>	<b>Comments</b>
AM PM					
AM PM					
AM PM					
AM PM					
AM PM					
AM PM					
AM PM					
AM PM					

Total Daily amount of Acetaminophen  
**Do not take more than 3,000 mg per day**

