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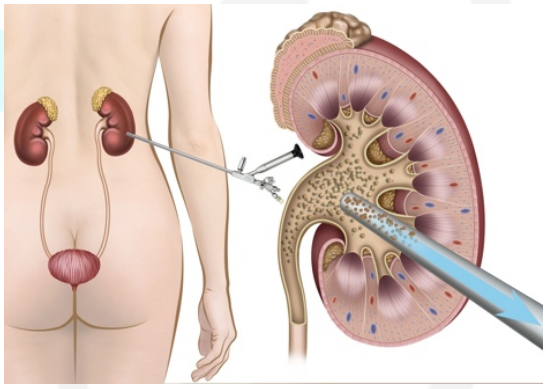
PERCUTANEOUS NEPHROLITHOTOMY (PCNL)

What is PCNL?

PCNL is a minimally-invasive procedure used to treat larger or more complex kidney stones. It involves making a small incision over the kidney and passing a miniature camera directly into the kidney, then using a fragmentation device to break up and extract the stones. PCNL has a very high success rate for completely clearing stones, and in many cases can be performed without requiring the use of a ureteric stent.



Where is PCNL done? How long does it take? How long will I stay?

PCNL is performed in the operating theatre of the hospital. Depending on the complexity of the case, it may take between 60 minutes and 4 hours. Some patients with resistant infections may need to be admitted to hospital for intravenous antibiotics 1-2 days before surgery, and most patients will stay 1-2 nights in hospital after the procedure.

What are the risks of PCNL?

PCNL is a safe procedure. However, all surgical procedures have risks. These will be described in detail by your surgeon.

- Bleeding - the kidney is a vascular organ, and some degree of bleeding is common with PCNL. Rarely, a patient may require a blood transfusion if the bleeding is significant. Even more rarely, if there is bleeding from a blood vessel within the kidney after the operation, a procedure to block the bleeding vessels may need to be performed (angiogram).
- Infection - kidney stones, particularly large stones, may harbour infection. Your urine will be tested preoperatively for the presence of infection, which will be treated. You will receive strong antibiotics during your operation. However, breaking the stone may sometimes release trapped bacteria, and you may develop an infection from this - if this happens it will be treated appropriately.
- Injury to structures around the kidney - with any surgical procedure, it is possible for structures around the surgical site to be injured. For PCNL, this includes the lung, bowel, liver, spleen, and blood vessels. These are rare occurrences, but if this were to occur it would be managed during your operation.
- Damage to the kidney - most kidneys will heal quickly after the procedure. Rarely,

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there may be some residual damage to the kidney.
- Leakage from the incision site - after removal of the nephrostomy, it is common to leak urine from the site for a few hours. Occasionally leakage may persist and require further procedures to manage this.
- Residual stones - PCNL will successfully clear over 90% of patient's stones. In around 5-10% of cases, some residual stone may require treatment.
- Failure of access - rarely, it may prove impossible to access the kidney stone. In these cases, your surgeon will formulate an alternative plan for treatment with you

What do I need to do before my procedure?

- Your surgeon will explain the PCNL to you. You will be asked to sign a consent form.
- Do not eat or drink anything for 8 hours before your surgery (midnight for morning surgery or 6am for afternoon surgery). Please do not chew gum while fasting. (This raises the level of acid in your stomach.)
- You may brush your teeth and rinse your mouth as long as you do not swallow any water.
- It is alright to continue most medications prior to surgery, with the exception of blood thinners and some diabetic medications. Please see the attached list for specific instructions.
- If you have a pacemaker, be sure that you tell your doctor.
- Remove all jewellery including body piercings.
- Do not wear any makeup.
- Bring all medicines that you are taking to the hospital with you.
- Do not bring valuables or large amounts of money with you to the hospital.

What can I expect on the day of my procedure?

- You will need to present to the admissions area of the hospital at the time you have been given.
- You will be given a hospital gown and asked to remove all of your clothes including underwear and socks. Put on the gown opening in the back.
- You will also be asked to remove all prostheses, hairpieces, jewellery (including body piercings), contact lenses, and glasses.
- You may be asked questions about your medical history. Some of these may be the same questions that you have already been asked. Please know that it is important that these questions be asked so that we can give you the best possible care.
- You will be taken to the preoperative holding bay. You may have some monitoring attached, and you will meet your anaesthetist and anaesthetic nurse here.
- You will have an IV (needle in your arm for fluids) started.
- When it is time for your surgery, you will be taken to the operating room. The room will be cold. The nurse will give you a warm blanket.
- You will be placed on a special table for the procedure.
- The staff in the operating room will include your surgeon, an assistant surgeon, a number of surgical nurses, an anaesthetist, an anaesthetic nurse, a radiographer,

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and a theatre technician. All of these people are there to take care of you and no one else.

- You will have a mask placed over your face. This will give you plenty of oxygen to breathe.
- .The anaesthetist will give you medicine in your IV that will help you fall asleep. You will not feel any pain and you will not wake up during your surgery.
- Your surgeon will place a small catheter up your ureter to allow X-ray contrast to be injected into the kidney, then will use a series of X-rays to place a needle into the desired location of the kidney, and dilate the tract to allow passage of the camera. Following this, the surgeon will fragment the stone with a miniature jackhammer and extract the stone pieces. At the conclusion of the case, the surgeon will fully inspect the kidney with a small flexible camera called a pyeloscope, to ensure no fragments remain.
- You will be in surgery for 1-4 hours depending on the size and location of your stone.
- When the operation is finished, the anaesthetist will give you medicine in your IV that will help you to wake up. You will be taken to the Recovery Room. The doctor will talk with your family.
- When you wake up, you may have an oxygen mask over your face. When you are awake enough to take deep breaths this will be removed.
- There will be a nurse taking care of you in the Recovery Room. You will have your blood pressure, pulse, and oxygen level checked. You will have a catheter in your urethra (tube to allow the urine to pass).
- During your surgery, the surgeon may leave a small catheter in the ureter. Sometimes, the surgeon may put in a stent. This is a tiny tube that holds your ureter (the tube from your kidney to your bladder) open. Sometimes, you may have a drain tube placed directly into the kidney called a nephrostomy tube. This will drain urine into a bag.
- If you are in pain or sick to your stomach please tell the nurse so that she can give you medicine.
- Call for the nurse to help you the first time that you need to get out of the bed. Do not try to get up without help.
- You will notice blood tinged urine when you go to the bathroom. This is normal for the first couple of weeks, or if you have a stent, for as long as the stent remains in. Call your surgeon if there is a lot of blood or if you are concerned.
- You will be admitted to the ward overnight. Your surgeon will review you the next morning and decide on the timing of removal of the tubes (catheter, nephrostomy tube, stent). Most people will be discharge after 1-2 nights in hospital.

Discharge Instructions for PCNL Patients

- The prescriptions that your doctor has written should be filled right away. If you are given an antibiotic prescription, you should take it as directed (even if you feel better) until it is

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completely gone.

- If you have slight pain or soreness, you may take paracetamol (up to 1 gram, 4 times per day) if you are not allergic to it. If this does not control your pain, take your prescribed pain medicine as directed.

After going home:

- Rest at home with moderate activity. Rest is important after anaesthesia. Do not take part in sports, jog, run, or ride a bike for 2 weeks. No straining or heavy lifting for 2 weeks.
- You may have some lightheadedness, dizziness, or sleepiness because of the medicines given to you during your procedure. Change positions from sitting to standing slowly.
- Have someone help you if you must go up or down stairs.
- Do not drive a motor vehicle, operate machinery, or use power tools for at least 48 hours.
- Do not drink any beverage containing alcohol, including beer.
- Pain medicines or the medicines used during your procedure may cause some people to feel nauseated (sick to your stomach). If you have nausea that is not controlled by your prescribed medicine, call your doctor.
- If you have a stent, you will feel like you need to go to the toilet frequently, and you may get some pain in your side when you urinate.

Other instructions:

- Drink as many fluids (without caffeine or alcohol) as you can for several days after your procedure. Water is best. This will help to wash the particles out of your kidney. It is best to drink at least one 250mL glass every hour while you are awake.
- Light activity such as walking is helpful for your recovery.
- Your urine may be bloody for 24-36 hours. If you notice that the amount of blood in your urine increases, decrease your activity level and drink extra fluids. If the urine continues to be bloody or the amount of blood increases, call your doctor right away. Note: If you had a stent inserted, your urine may be bloody until it is removed.
- Your back may be sore for a few days after your procedure. Using a heating pad may help with this. Do not put it directly against your skin or go to sleep with it set above the low setting.
- If you are not doing well, do not hesitate to call your urologist.

Call Your Doctor If:

- Your have a fever (temperature >38°C)
- You develop new dark bleeding in the urine with clots
- You have continuous nausea or vomiting, or your pain is not controlled by your pain medicines
- You have any other concerns