

Percutaneous nephrolithotomy (PCNL)

Department of Urology

What is a percutaneous nephrolithotomy (PCNL)?

A percutaneous nephrolithotomy (PCNL) is a procedure to remove a kidney stone or stones. Percutaneous means 'through the skin' and nephrolithotomy means 'taking stones out of the kidney'.

Why do I need a PCNL?

From the results of your tests, you have a stone or stones in your kidney. Not all kidney stones cause symptoms, but yours may have caused significant problems, such as pain or infection. If nothing is done to remove them, they will continue to grow and could damage your kidney.

Are there any alternatives to a PCNL?

Possible alternatives include:

- open surgery
- extracorporeal shock wave lithotripsy (ESWL) and
- ureteroscopy (URS).

A PCNL generally removes more stone fragments than ESWL and URS and has a shorter recovery time than open surgery. However, this will depend on your individual circumstances. Your consultant will discuss these with you in more detail if they are appropriate for you. PCNL offers the best chance of clearing large stones (>2cm or multiple) with one procedure.

How can I prepare for my surgery?

You will usually be required to stop blood-thinning medications such as warfarin, aspirin, clopidogrel and dipyridamole before surgery, but please discuss with your specialist. Do not make any changes to your usual medicines, unless your specialist has told you to do so.

You will be given a pre-assessment appointment to assess your suitability and fitness for surgery and the anaesthetic. This will also give you the opportunity to ask any further questions before you come into hospital for the procedure. You must come to this appointment; if you do not, we may have to delay or cancel your surgery.

Because of the risk of infection following stone surgery, if you have an infection before the operation the surgery will be postponed. At pre-assessment a urine sample will always be sent. If the urine sample confirms infection your GP will prescribe antibiotics.

If you feel you have an infection whilst waiting for your surgery:

- give a urine sample to your GP
- contact us as your surgery may need to be postponed to allow the infection to be cleared. If this happens we will give you a new date for surgery.

What happens before the surgery?

You will be admitted on the day of surgery, and will meet the surgeon and anaesthetist. You are having a general anaesthetic, so please do not eat for six hours before your surgery. This includes sweets and chewing gum. You can have non-fizzy water up to two hours before your surgery.

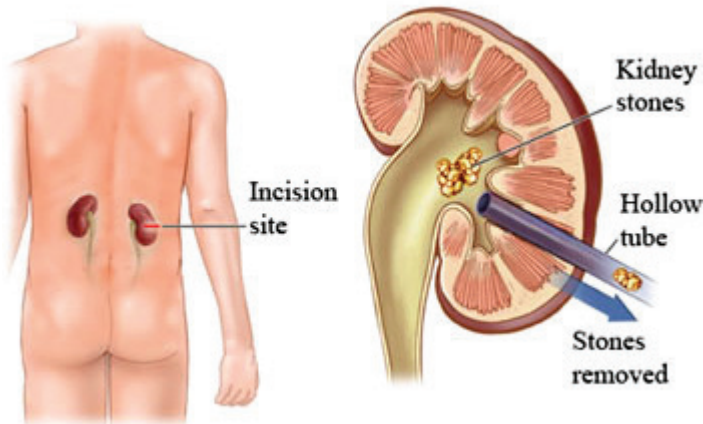
You will need to sign a consent form and be marked to identify which side your operation will be. This consent gives the consultant permission to operate on you and confirms that you understand what the procedure involves.

Please bring all of your medications, including prescription medications, medication you have bought or alternative medicines, such as herbal remedies, so we know what you are taking. Unless your doctor or nurse tells you otherwise, please take your tablets as prescribed, with a small sip of water, on the day of your surgery.

You will be asked to change into a hospital theatre gown and elasticised stockings. These stockings help to reduce the possibility of clots (deep vein thrombosis or DVT) forming in your legs during surgery. These should be worn throughout your hospital stay.

What happens during a PCNL?

The operation begins by inserting a telescope-like instrument (known as a cystoscope) into the bladder. A tube is then passed up the ureter into the kidney. This tube allows the kidney to be filled with dye (contrast medium) to allow your surgeon to localise the kidney with x-rays.



Picture Courtesy: panchalurologycentre.com

You are moved on to your front (lying face down). With the aid of the x-ray machine, the kidney is punctured with a fine needle. The needle position is confirmed by either outflow of urine or dye from the needle. Once the kidney has been entered, a 1.5cm incision is made in the back and the needle tract into the kidney is then stretched (dilated) to allow a telescope to be passed into the kidney. The needle tract is then dilated. A scope and other stone fragmentation tools such as a laser or an ultrasonic probe will be inserted through this tract for stone fragmentation and removal. The whole procedure usually takes 2-3 hours.

After the operation, a tube is left in the kidney and a catheter is left in the urethra (the tube which carries urine from your bladder and out of your body) to ensure good urinary drainage. These are removed over the next few days depending on clinical progress and will be reviewed daily by the medical team.

What are the potential risks and complications?

Most procedures have possible side-effects. But, although the complications listed below are well recognised, most patients do not suffer any problems.

Common (greater than 1 in 10)

- Blood in the urine (temporary)
- Raised temperature (temporary).

Occasional (between 1 in 10 and 1 in 50)

- Occasionally the surgeon will need to make more than one puncture
- There is no guarantee all the stones will be removed and you may need further operations
- You may get new stones
- The surgeon may not be able to get access to the kidney and you may need further surgery.

Rare (less than 1 in 50)

- Severe kidney bleeding requiring transfusion, embolisation or, as a last resort, removal of kidney
- Damage to the lung, bowel, spleen, or liver which will need surgery
- Kidney damage or infection needing further treatment
- Irrigating fluids may get into the blood system and cause a strain on the heart.

Hospital-acquired infection

- Colonisation with MRSA (0.9% - 1 in 110)
- Clostridium difficile bowel infection (0.01% - 1 in 10,000)
- MRSA bloodstream infection (0.02% - 1 in 5000).

The rates for hospital-acquired infection may be greater in high-risk patients, for example those patients

- with long-term drainage tubes;
- who have had their bladder removed due to cancer;
- who have had a long stay in hospital; or
- who have been admitted to hospital many times.

What happens after the PCNL?

Once your procedure is over you will be taken to the recovery room and remain there until you come around from the anaesthetic. This may take an hour or two. You will then be taken back to your ward. If you are in pain or feel nauseous (sick) while in the recovery room, please let the staff know, as they can give you medicine to help with this.

You will need to remain in bed at first. During this time, we will ask you to move your feet and ankles and wiggle your toes to help encourage circulation in your legs. This will also reduce the risk of blood clots in your legs.

You will have a drainage tube from your kidney, which may be attached to a collection bag to drain your urine. The nurses will regularly empty the bag and measure the volume of urine produced. Try not to make sudden movements while the bag is attached.

How long you need this tube depends on the amount of left-over fragments, clots, and other debris. It is usually removed 1-2 days after your surgery, but you may need x-rays to confirm when it is ready to be removed. You may also have a urethral catheter for about the first 24 hours after your surgery. This is a tube inserted into the bladder through your urethra (tube that carries urine from the bladder and out of the body). This may be uncomfortable; please tell us if it is so we can manage your discomfort.

The average stay in hospital for this surgery is two to three days after the operation.

What do I need to know after I go home?

When you leave hospital, you will be given a 'draft' discharge summary. This contains important information about your stay in hospital and your operation. If you need to call your GP or if you need to go to another hospital, please take this summary with you so the staff can see the details of your treatment. This is important if you need to consult another doctor within a few days of being discharged.

- You may experience some blood in your urine for up to two weeks. Make sure you drink plenty of fluids to help with this. Aim to drink two litres (about three and a half pints or eight cups), of water, squash or fruit juice each day.
- You may feel sore around the operated area for several weeks; we will prescribe you painkillers to help with this.
- Avoid lying down for long periods, as reduced movement increases the risk of developing pneumonia or blood clots in your legs.
- Avoid heavy lifting and straining for four weeks.
- Give yourself two to four weeks before returning to work. If your work involves heavy lifting or exercise, please speak to your consultant.
- Only start driving again when you are able to perform an emergency stop without feeling hesitant. Check with your insurance company to make sure you are covered to start driving again.

Will I have a follow-up appointment?

You will have a follow-up appointment in clinic a couple of months after your procedure. This may involve having x-rays taken of your kidney and bladder.

What if I have any problems?

Please contact the hospital if you experience any of the following after you have left hospital:

- persistent bleeding or leaking of urine from the operation site
- fresh blood in your urine
- excessive pain
- a temperature over 38°C (100.4F)
- difficulty passing urine.

If you have any further questions or concerns please contact the Urology Specialist Nurses, Urology Department

The Princess Royal Hospital

Ansty ward **01444 441881 Ext. 8240/8241**

The Urology Nursing Team **01444 441881 Ext. 5457**

Urology Consultants:

Mr Nawrocki's secretary **01444 441881 Ext. 5962**

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