

# Surgery to remove your kidney stones — a percutaneous nephrolithotomy (PCNL)

This leaflet explains more about percutaneous nephrolithotomy, a surgery to remove your kidney stones. It describes the benefits, risks and any alternatives, and what you can expect when you come to hospital.

If you have any further questions, please speak to a doctor or nurse caring for you.

## 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, your doctor has confirmed that 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.

## What are the potential risks and complications?

- **Problems relating to the anaesthetic:** such as a chest infection. More information about anaesthetic and the risks associated with it is included in the leaflet **Having an anaesthetic**. If you do not have a copy, please ask us for one.
- **Problems relating to the surgery:** deep vein thrombosis or DVT (blood clot in the legs), a pulmonary embolus (blood clot in the lung), stroke or heart attack.
- **Bleeding:** in or around the kidney. Some bleeding is normal; rarely it may be significant enough to require a blood transfusion (in less than five out of every 100 patients). If the bleeding does not stop, you may need an angiogram to block the blood vessel that is bleeding. This is a specialist treatment done in the x-ray department. In the rare event that this does not stop the bleeding, it might be necessary to remove the kidney (nephrectomy). This is extremely rare and happens in less than one out of every 1,000 patients.
- **Infection:** because some stones have bacteria trapped within them, we give you antibiotics routinely to prevent infection after the operation. A raised temperature is common after this procedure (25 out of every 100 patients), but this is usually temporary. One out of every 200 patients is at risk of sepsis (blood poisoning).
- **Bowel perforation:** there is a possibility of damaging the bowel during the operation. However, this is rare and happens in less than one out of every 100 patients.

- **Injury to the lung cavity:** there is a small chance of pockets of air or fluids forming around a lung if the needle is inserted toward the upper portion of the kidney (this will have been decided by your surgeon depending on where the stones are). These pockets are treated with a chest tube, which allows the fluid to drain from around the lung.
- **Fluid build-up:** sometimes urine can leak from the kidney, resulting in a small collection of fluid inside the abdomen (tummy). If this becomes a large collection, it may need draining which is usually done in the x-ray department. In some cases a temporary internal drainage tube called a stent is inserted. This is a small tube which runs from the kidney down to the bladder to make sure that the kidney is able to drain urine.
- **Retained fragments:** sometimes not all the stones are removed and these may need further treatment. Rarely, a stent is inserted during the procedure and left in place. If it has a string attached, it is removed within 24 to 48 hours; if it does not have a string attached, it can be removed within six weeks. An x-ray is taken before removing the stent to find out if the fragments have passed with the urine.

## Are there any alternatives to a PCNL?

The consultant caring for you has recommended that a PCNL is the most suitable option to remove your stone(s). 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 options with you in more detail if they are appropriate for you. Please ask questions if you are uncertain.

## How can I prepare for my surgery?

If you smoke, you may be asked to stop smoking, as this increases the risk of developing a chest infection or deep vein thrombosis (DVT). Smoking can also delay wound healing because it reduces the amount of oxygen that reaches the tissues in your body. If you would like to give up smoking, please speak to your nurse or call the NHS Smoking Helpline on **0800 169 0 169**.

You may need to stop anticoagulant medicines such as warfarin, aspirin, clopidogrel and dipyridamole up to one week before surgery, but please discuss this with your specialist. **Do not make any changes to your usual medicines, unless your specialist has told you to do so.**

You will need to attend 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.

If you think you have an infection while waiting for your surgery:

- give a urine sample to your GP. If the urine sample confirms infection, your GP will prescribe antibiotics.
- 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.

## Giving my consent (permission)

We want to involve you in decisions about your care and treatment. If you decide to go ahead, you will be asked to sign a consent form. This states that you agree to have the treatment and you understand what it involves.

You should receive the leaflet, **Helping you decide: our consent policy**, which gives you more information. If you do not, please ask a member of staff caring for you for a copy.

## What happens before the surgery?

When you arrive at the ward, your admitting nurse will show you around. The nurses will also fill in any ward paperwork needed and carry out any tests that your consultant's team has asked for. Even though you will have provided a urine specimen before, your urine will be tested again for infection, in case one has developed since then. If this is positive, your operation will probably be postponed. The evening before the surgery you will be given fluids and antibiotics into a vein to try to keep your kidneys working well and prevent infection.

The evening or morning before your procedure the anaesthetic team will visit you and discuss with you the anaesthetic they will use. You will be able to ask them any questions you have about your anaesthetic at this time.

You will be able to eat and drink as normal the evening before your surgery. However, as you are having a general anaesthetic, **you will need to fast**. Fasting means that you cannot eat or drink anything (except non-fizzy water) for six hours before surgery. This includes sweets and chewing gum. You will need to stop drinking water two hours before your surgery. We will give you clear instructions when to start fasting.

Please bring all of your medicines, including prescription medicines, medicines you have bought over the counter 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.

On the morning of your surgery, you will be asked to have a shower and change into a 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?**

This operation is carried out under general anaesthetic, which means you will be asleep throughout the procedure.

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) which helps your surgeon to localise the kidney with x-rays. You are then moved into a prone position (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 needle is positioned in the kidney, a 1.5cm incision (cut) is made in the back, and the needle tract into the kidney is stretched (dilated) to allow a telescope to be passed into the kidney. Other stone fragmentation tools such as a laser or an ultrasonic probe will also be inserted through this tract for stone fragmentation and removal. The whole procedure usually takes two hours.

## **What happens after the PCNL?**

Once your procedure is over, you will be taken to the recovery room and remain there until you wake up 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. 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 leftover fragments, clots, and other debris. It is often removed the day 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 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 following this surgery is two to three days.

## **What do I need to know after I go home?**

- You may notice 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. We recommend that you do not drink more than two cups of tea or coffee each day. You should avoid drinking alcohol while you are recovering.
- You may feel sore around the operated area for several weeks; we will prescribe you painkillers to help with this.

- Avoid becoming constipated by eating a healthy, balanced diet, as straining to open your bowels increases the risk of bleeding. Eat plenty of fruit and vegetables and other foods high in fibre, such as wholemeal bread, pasta and rice. If you need more advice about your diet, please speak to your doctor.
- 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 six weeks after your procedure. On that day, you will have x-rays taken of your kidney and bladder. The consultant or a member of their team will continue to see you in future follow-up appointments.

## 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.

## Contact us

If you have any questions or concerns about percutaneous nephrolithotomy (PCNL), please contact the **Stone Unit**, Monday to Friday 8.30am to 5.30pm on **020 7188 9099**.

Alternatively, call the main hospital switchboard on **020 7188 7188** and ask for the bleep desk. Then ask the operator to bleep:

- the stone practitioner during normal working hours, or
- the on-call senior house officer (SHO) after 5.30pm on bleep 1228 (emergency only).

Out of hours, call the ward that you stayed on:

|                |               |
|----------------|---------------|
| Aston Key Ward | 020 7188 0709 |
| Florence Ward  | 020 7188 2441 |

### **Pharmacy Medicines Helpline**

If you have any questions or concerns about your medicines, please speak to the staff caring for you or call our helpline.

**t:** 020 7188 8748 9am to 5pm, Monday to Friday

### **Patient Advice and Liaison Service (PALS)**

To make comments or raise concerns about the Trust's services, please contact PALS. Ask a member of staff to direct you to the PALS office or:

**e:** 020 7188 8801 at St Thomas'      **t:** 020 7188 8803 at Guy's      **e:** [pals@gstt.nhs.uk](mailto:pals@gstt.nhs.uk)

### **Knowledge & Information Centre (KIC)**

For more information about health conditions, support groups and local services, or to search the internet and send emails, please visit the KIC on the Ground Floor, North Wing, St Thomas' Hospital.

**t:** 020 7188 3416

### **Language support services**

If you need an interpreter or information about your care in a different language or format, please get in touch using the following contact details.

**t:** 020 7188 8815      **fax:** 020 7188 5953

### **NHS Choices**

Provides online information and guidance on all aspects of health and healthcare, to help you make choices about your health.

**w:** [www.nhs.uk](http://www.nhs.uk)

### **Become a member of your local hospitals, and help shape our future**

Membership is free and it is completely up to you how much you get involved. To become a member of our Foundation Trust, you need to be 18 years of age or over, live in Lambeth, Southwark, Lewisham, Wandsworth or Westminster or have been a patient at either hospital in the last five years. To join:

**t:** 0848 143 4017      **e:** [members@gstt.nhs.uk](mailto:members@gstt.nhs.uk)      **w:** [www.guysandstthomas.nhs.uk](http://www.guysandstthomas.nhs.uk)

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