



PERCUTANEOUS (KEYHOLE) REMOVAL OF STONES FROM KIDNEY(PCNL)

What does the procedure involve?

The breakdown & extraction of kidney stones using a telescope placed into the kidney through a small puncture in the back. This usually includes cystoscopy and x-ray screening

What are the alternatives to this procedure?

The alternatives to this procedure include external shock wave treatment, "open" surgical removal of stones and observation.

What should I expect before the procedure?

If you regularly take aspirin or clopidogrel, you must discuss this with your urologist because these drugs can cause increased bleeding after surgery. Stopping them may reduced the risk of bleeding but this can result in increased clotting, which may also carry a risk to your health. You will need to discuss the risks and benefits of the treatment with your GP or urologist. You will usually be admitted to hospital on the same day as your surgery. You will normally receive an appointment for a "pre-assessment" to assess your general fitness and to do some baseline investigations. Once you have been admitted, you will be seen by members of the medical team which may include the consultant, specialist registrar, house officer and your named nurse. You will be asked not to eat and drink for six hours before surgery. Immediately before the operation, the anaesthetist may give you a pre-medication which will make you dry mouthed and pleasantly sleepy. If you are admitted on the day before surgery, you will normally be given antibiotics into a vein to prevent any infection at the time surgery.

Please tell your surgeon (before your surgery) if you have any of the following:

- An artificial heart valve
- A coronary artery stent
- A heart pacemaker or defibrillator
- An artificial joint
- An artificial blood-vessel graft
- A neurosurgical shunt
- Any other implanted foreign body
- A regular prescription for a blood thinning agent such as warfarin, aspirin, clopidogrel (Plavix®), rivaroxaban, prasugrel or dabigatran
- A previous or current MRSA infection
- A high risk of variant-CJD (if you have had a corneal transplant, a neurosurgical dural transplant or injections of human-derived growth hormone).

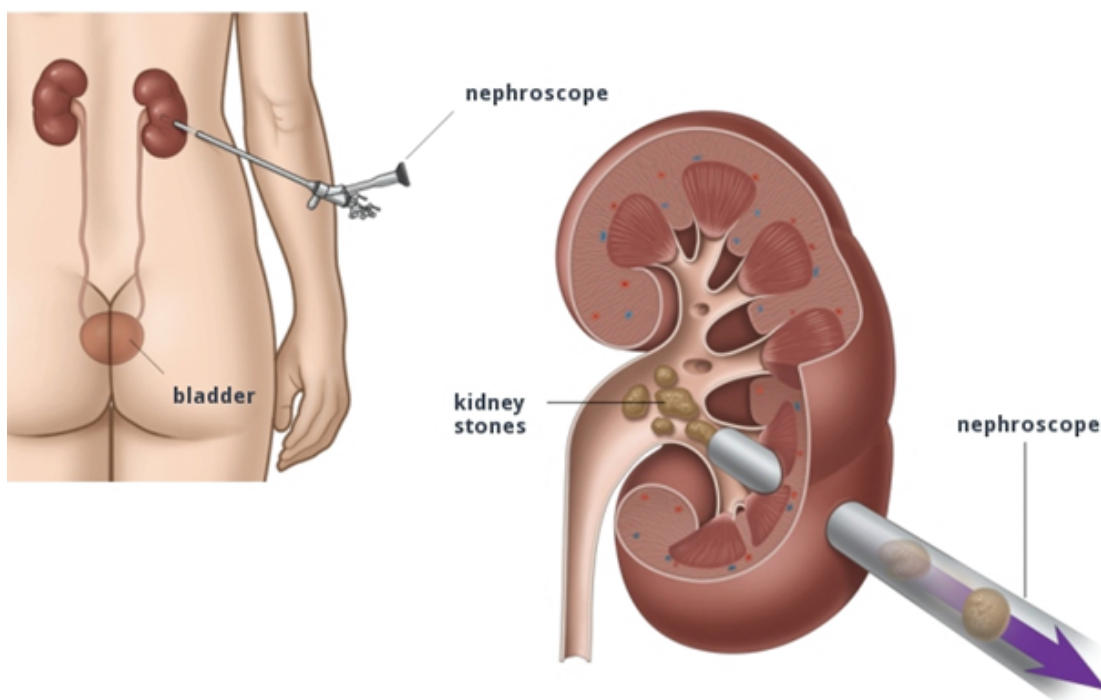
When you are admitted to hospital, you will be asked to sign the second part of your operation consent form giving permission for your operation to take place, showing you understand what is to be done and confirming that you want to go ahead. Make sure that you are given the opportunity to discuss any concerns and to ask any questions you may still have before signing the form.



What happens during the procedure?

Normally, you will be given a full general anaesthetic and you will be asleep throughout the procedure. You will usually be given an injection of antibiotics before the procedure, after you have been checked for any allergies. The operation is usually carried out in a single stage. First, the surgeon inserts a small tube up the ureter into the kidney by using a telescope passed into the bladder. You are then turned on your face or side, and the surgeon makes a puncture hole into the kidney, using X-ray or ultrasound as a guide. Finally, the surgeon passes a telescope through the skin into the kidney (pictured) and the stones are broken down or extracted. A catheter is usually left in the bladder at the end of the procedure, together with a drainage tube in the kidney.

It may be necessary to puncture the kidney at more than one site if you have many stones scattered throughout the kidney.



What happens immediately after the procedure?

You should be told how the procedure went and you should:

- Ask the surgeon if it went as planned;
- Let the medical staff know if you are in any discomfort;
- Ask what you can and cannot do;
- Feel free to ask any questions or discuss any concerns with the ward staff and members of the surgical team; and
- Make sure that you are clear about what has been done and what happens next.

Occasionally, it may be necessary to take an X-ray down the kidney drainage tube using contrast medium (dye). If the X-ray is satisfactory, the tube in your kidney and the bladder catheter will be removed. The site of the drainage tube often leaks for 24 - 48 hours and you will be only be allowed to go home once this leakage has resolved.



Are there any side-effects?

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, 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

Please note: The rates for hospital-acquired infection may be greater in “high-risk” patients. This group includes, for example, patients with long-term drainage tubes, patients who have had a long stay in hospital or patients who have been admitted to hospital many times.

What should I expect when I get home?

When you are discharged from hospital, you should:

- Be given advice about your recovery at home;
- Ask when you can begin normal activities again, such as work, exercise, driving, housework and sex;
- Ask for a contact number if you have any concerns once you return home;
- Ask when your follow-up will be and who will do this (the hospital or your GP); and
- Be sure that you know when you get the results of any tests done on tissues or organs which have been removed.

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.



When you get home, you should drink twice as much fluid as you would normally to flush your system through and keep any bleeding to a minimum. You should aim to keep your urine permanently colourless to reduce the risk of further stone formation. It may take at least two weeks to recover fully from the operation.

You should not expect to return to work within 10 days, especially if your job is physically demanding.

What else should I look out for?

If you develop a fever, severe pain when passing urine, inability to pass urine or bleeding which gets worse, you should contact us immediately. Small stone fragments may also pass down the ureter from the kidney, resulting in renal colic. In this event, you should also contact your GP for advice .

Are there any other important points?

You can prevent further stone recurrence by making changes to your diet and the amount of fluid you drink. If you have not already received a leaflet about this, contact your named nurse, the specialist nurse in outpatients or your consultant.