



York and Scarborough
Teaching Hospitals
NHS Foundation Trust

Percutaneous Nephrolithotomy (P.C.N.L.)

Information for patients, relatives and carers

Department of Urology

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What does this involve?

Percutaneous Nephrolithotomy (PCNL) is a major surgical operation performed with a General Anaesthetic. The intention is to remove kidney stones by creating a small access channel or 'tract' directly into the kidney through your back.

This is created under x-ray guidance by a Consultant Radiologist, so as to make a track into the kidney. This is probably the most difficult part of the operation. Some kidneys can be challenging to access and this sometimes fails which means that the operation cannot proceed.

This access tract can be created with you lying on the front (called a 'Prone' approach) or on your back (called a 'Supine' approach). There are advantages to both methods – Your Surgeon will discuss this with the Radiologist who will be present in theatre.

Once this track has been created instruments are then passed to remove the stone either whole or in small pieces once the stone has been fragmented.

What type of Kidney stones are treated with a PCNL?

A P.C.N.L. operation is used usually for large stones usually over 3cm in size. These stones can be a source of infection and can damage the kidney.

Sometimes stones that cannot be accessed with P.C.N.L. may need further treatments with Flexible Ureteroscopy or E.S.W.L. (Shock Wave Lithotripsy) – please see our booklets on these treatments. Increasingly, this combination or ‘multi-modality’ of treatment is used to treat stones.

Patients with stones sized under 3cm may still be suitable for the P.C.N.L. approach, as it offers a greater chance of needing only one treatment to remove the stone. P.C.N.L. is often selected where telescope laser surgery (Flexible Ureteroscopy) would take multiple procedures to treat the stones.

What are the benefits?

To treat the stone in the kidney. Large stones in the kidney are a source of infection and can damage the kidney over time to the extent that this is permanent.

What are the alternatives?

For stones of the size where P.N.C.L. is being considered, the alternative treatments include:

- Flexible Ureteroscopy
- E.S.W.L. (Shock Wave Lithotripsy)

How am I prepared for my operation?

Patients who are undergoing more major surgery are often given an injection of a drug called Dalteparin; this is used to reduce the risk of clots forming in the veins of the leg. These injections are often given daily for some days after the operation.

White support stockings may also be worn on the legs to prevent clots (D.V.T. or Deep Vein Thrombosis) forming. You may also need further X-Ray tests before your procedure.

Are there any risks associated with the procedure?

- Failure to remove the stones or access the kidney.
- Infection of the site of access/bleeding from wound or in urine/Urinary tract infection/stent symptoms of blood in urine and changes in frequency and urgency of urination – half (50%) of cases.
- Severe infection causing ‘septicaemia’ (Bacteria in Blood) – one in 20 cases requiring prolonged antibiotics.
- Stone Recurrence.
- Heavy bleeding from the kidney in one in 10 to one in 20 cases which rarely needs further special x-ray techniques (embolisation) with blood transfusions to control.
- In less than one in 100 cases the bleeding is so heavy the kidney has to be removed.
- In less than one in 100 cases there is serious damage to other organs (spleen, liver, chest wall, pleura of chest, blood vessels, bowel, lung) - although this depends on the specific access into the kidney. This may require a further drain or another surgical procedure in order to treat.

The Clinical Research Office of the Endourological Society (CROES) examined complications following PCNL surgery. (J Endourol. 2011 Jan; 25 (1):11-7. The Clinical Research Office of the Endourological Society Percutaneous Nephrolithotomy Global Study: indications, complications, and outcomes in 5803 patients. De la Rosette J et al -The CROES PCNL Study Group.)

They found that over 85 out of 100 patients had surgery without any major event.

They also observed other complications at the rates outlined below:

- Significant bleeding - 7.8%
- Injury and perforation to the kidney pelvis - 3.4%
- Fluid in the chest cavity - 1.8%
- Blood transfusion - 5.7%
- Significant Fever - 10.5%

Before you have the procedure you will be asked to sign a consent form (FYCON168-1 Percutaneous Nephrolithotomy) to confirm that you agree to the procedure and understand the information given to you. This form will be kept in your patient notes and you will also be offered a copy for your own records.

What should I expect afterwards?

You may have a tube coming out of your back (a nephrostomy) draining urine from the kidney. There will probably also be a tube (catheter) draining the bladder and there may be a second tube fastened to the catheter.

If the stone was removed easily and there was no bleeding, there may be no tube in the back.

Usually there is some blood in these tubes. The tubes will be removed over the next two to four days depending on your clinical condition and sometimes special X-rays are taken beforehand.

If all the stone has not been removed then the tube in your back may be left or may be converted to an internal tube called a 'Stent'.

You will be allowed to go home with this temporary tube, and then you will be readmitted with plans to remove the rest of the stone.

Will I be in pain after the procedure?

You may experience pain around your wound following your operation; the amount varies from person to person and should lessen as the days go by.

You may be given some painkillers to take home with you. In the first few days, don't wait for the pain to be at its worst before taking the painkillers – Instead take regularly, (as directed) to avoid pain. As you feel better you will not need as many painkillers.

If you have not been given any painkillers to take home with you, this is because your surgeon felt that paracetamol would be sufficient to relieve any pain. You can buy these at your chemist.

However, if you use any other painkillers regularly, these may help with your operation pain instead. But, please ensure you read the instructions carefully and take only as directed. Be careful not to mix different types of painkillers unless directed by your doctor.

What can I expect when recovering at home?

You will usually need to plan for two weeks off work with no exercise or holidaying during this time. We recommend a gradual increase in gentle exercise such as walking on the flat, climbing stairs or lifting light objects.

Fluid consumption is important to allow any residual bleeding or infection to be passed out of the kidney – most adults should be able to consume three litres of fluid per day during this recovery.

The risk of infection can persist following surgery. Signs such as fevers, shivering, pain on passing urine or an unusual appearance or smell to the urine might indicate an infection. If you're at home and these occur, you may need to provide a urine sample looking for an infection to your GP surgery.

Tell us what you think of this leaflet

We hope that you found this leaflet helpful. If you would like to tell us what you think, please contact:

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Teaching, Training and Research

Our Trust is committed to teaching, training and research to support the development of health and healthcare in our community. Healthcare students may observe consultations for this purpose. You can opt out if you do not want students to observe. We may also ask you if you would like to be involved in our research.

Patient Advice and Liaison Service (PALS)

PALS offers impartial advice and assistance to patients, their relatives, friends and carers. We can listen to feedback (positive or negative), answer questions and help resolve any concerns about Trust services.

PALS can be contacted on 01904 726262, or email pals@york.nhs.uk.

An answer phone is available out of hours.

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