

Percutaneous (*Keyhole*) Removal of Kidney Stones (*PCNL*)

Patient Information – Urology Service

What is a urinary tract stone?

Some of the body's waste products are removed in the urine. When urine becomes concentrated, crystals form. Most people simply excrete these crystals in their urine. In a small amount of people, the crystals stick together and form stones.

Urine normally has chemicals that stop stones forming. In some people with kidney stones, these chemicals do not work properly.

Urinary tract stones have nothing to do with gall bladder stones.

Percutaneous removal of kidney stones (PCNL)

PCNL is keyhole surgery. Under general anaesthetic, the stone is removed by passing a small telescope through your side directly into the kidney. The stone is broken up and the fragments are removed.

What happens before my operation?

You have a kidney stone that is visible on x-ray and that is suitable for PCNL.

The surgery and outcomes will be explained to you by your surgeon before the surgery. When you feel comfortable that you understand what is to be done and have had all your questions answered, you will be asked to sign a consent form. This consent form should be signed by both yourself and your surgeon and forwarded to the hospital prior to your admission.

A blood test will need to be performed and a urine sample may need to be taken a few days prior to your surgery.

An x-ray may be performed just before your surgery to check the position of your stone(s).

If you are over 60 years of age, or have other medical conditions, you may also have an electrocardiogram (ECG) prior to surgery to check the health of your heart.

You will be advised when to stop eating and drinking before surgery. This includes water and chewing gum. You can swallow tablets with a small sip of water.

You should bring your own medications with you to hospital.

It is important to avoid constipation. Try to establish and maintain a regular, soft bowel habit leading up to your surgery. Identify the foods that can help you maintain a regular bowel habit for your post-op period.

Please inform your surgeon if you are taking anti-coagulant (blood thinning) medication (e.g. warfarin, clopidogrel, dabigatran, rivaroxaban or ticagrelor), or any

medication for diabetes. Your surgeon will advise when to stop and restart these medications. If you are taking aspirin, it is okay to continue taking this.

What happens on the day of my operation?

You will go to Christchurch Hospital on the day of your surgery. Be aware that this is not a day surgery. On arrival, the staff will guide you through what is required prior to your surgery.

You will have a clean hospital gown and protective stocking fitted.

An x-ray of your abdomen may be performed to check the location of the stone.

An IV (intravenous) line will be placed in a vein in your arm or hand that will be used to supply fluids or medications during the surgery.

You may be given a medication to prevent blood clots.

You will be encouraged to commence deep breathing and coughing exercises pre-operatively. This prevents any breathing complications or chest infection from occurring, following the surgery and anaesthetic.

This operation is performed under general anaesthesia. The anaesthetist will see you before the surgery. A tube may be inserted into your throat to help you breathe while you are in a sleep-like state.

Just prior to your surgery, you may be given a pre-medication tablet to relax you. You may also be given an alpha blocker at the time of the stone treatment to relax the ureter (tube from the kidney to the bladder) and helps the passage of stone fragments.

What happens during my operation?

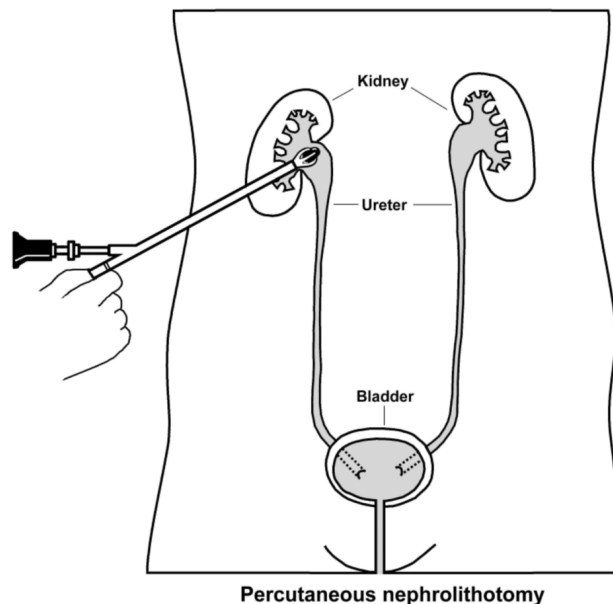
First, a small tube is inserted up the ureter (tube to drain urine from the kidneys to the bladder) by means of a telescope passed into the bladder.

You are then turned face down (onto your stomach) and a small (keyhole) incision is made into the kidney, using x-ray guidance. Sometimes you may be on your back for this operation.

Finally, a telescope is passed through your side and into your kidney. The surgeon locates and removes the stone by breaking it into pieces using a laser or an ultrasound.

When you wake up, you will usually have a small tube coming from your kidney draining the urine into a bag. This is usually removed the next day. You may also have a small internal plastic tube that sits in your ureter to allow urine to drain into the bladder. This is called a double-J stent (or JJ stent).

You will also have a catheter in your bladder to drain the urine. This will usually be removed the next day.



What to expect after the operation?

On the day after your surgery, a further x-ray is normally done to assess stone clearance. If the x-ray is satisfactory, the tube in your kidney and the catheter in your bladder will be removed.

There is often some leakage from the kidney tube site for 24 – 48 hours after surgery. Most people will be in hospital for between two and three days.

What to expect after discharge?

If you have a stent, this will usually be removed at this appointment with a flexible telescope. You will be given more information about this if this applies to you.

When you get home, you should drink twice as much as you would normally to flush your system through and minimise any bleeding. You should aim to keep your urine permanently colourless to minimise 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 strenuous.

You can usually resume driving when you feel that you could perform an emergency stop without being concerned about pain (usually about two weeks after surgery).

Possible complications

All procedures have a potential for side effects. You should be reassured that, although these complications are well-recognised, most patients do not suffer any problems after a urological procedure.

Common (experienced by more than 1 in 10 patients)

- It is common to have blood in the urine
- It is common to have a raised temperature.

Occasional (experienced by between 1 in 10 and 1 in 50 patients)

- Occasionally more than one puncture site is required
- Not all stones may be removed
- Failure to gain access to the kidney resulting in the need for further surgery.

If you develop a fever, severe pain on passing urine, inability to pass urine, or worsening bleeding, please contact your GP immediately or visit the Emergency Department at your local hospital.

Small blood clots or stone fragments may travel from your kidney, resulting in renal colic. Renal colic may present as intense pain in the side of your abdomen, which may spread down into the lower abdomen or groin. In this event, please contact your GP immediately.

Follow-up

You will receive an appointment notification to attend the Urology Outpatient clinic. This is about six weeks after your surgery. A letter will also be sent to your own doctor about your operation.

Contact information

For more information about:

- Hospital and specialist services, go to www.healthnz.govt.nz/hospitals-services/hospitals/canterbury
- Your health and medication, go to www.healthnz.govt.nz/health-topics

For information on parking, how to get to the hospital, and visiting hours, please visit the [Christchurch Hospital](http://www.christchurchhospital.co.nz) website.