PCNL

Percutaneous renal surgery is minimally invasive telescopic surgery performed under general anaesthetic for kidney stones, tumours and some other collecting system problems where it is preferable to access the kidney from above or impossible to gain access ureteroscopically. The kidney is visualized radiologically and an access sheath 1 cm in diameter is placed through the skin and muscles of the back, into the kidney. This acts as a sleeve for the telescope instruments to pass into the kidney collecting system. Percutaneous nephrolithotomy (PCNL) is the fragmentation and removal of stones down this access sheath.

Percutaneous surgery avoids some of the risks of open surgery and allows for a shorter hospital stay and rapid recovery of normal function. There is minimal injury and scarring to the kidney. A JJ ureteric stent or a nephrostomy (kidney drainage tube) is left passing out along the track through the skin and a urethral catheter draining the bladder stays for one to two days after the surgery. Most patients go home one or two days after the surgery. The kidney has a generous blood supply and bleeding, from placement of the access sheath through the kidney tissue, is the major surgical risk.

WHAT TO DO BEFORE YOUR PROCEDURE:

- ensure laboratory tests are done > 48 hours prior to surgery, unless advised otherwise
- discontinue aspirin and other anticoagulants 1 week prior, other medications may also need to be stopped
- nothing to eat or drink from 6 hours prior to procedure - see Admission Booklet regarding diet restrictions
- microlax enema morning of the procedure for afternoon procedures, evening prior for morning procedures
- you will be admitted to hospital on the day of surgery.
- you do not need to shave prior to surgery

WHAT HAPPENS IN HOSPITAL AFTER YOUR PROCEDURE:

- day 1: observation in hospital, the nephrostomy and urethral catheter may be removed
- your hospital stay is commonly 1-2 days

WHAT HAPPENS AFTER YOU LEAVE HOSPITAL:

- recovery is reasonably quick, with return to normal activities including driving after 10 days.
- withhold aspirin and other anticoagulants for 1 week but reinstate other usual medications.
- the Steristrip (tape) dressings should be left on the wounds for 4 weeks. If the Steristrips come off, the wounds should be left exposed without further dressings applied
- post-operative constipation is a common problem and may be minimised with good fluid intake, dietary fibre and laxatives.
- avoid heavy lifting for 2 weeks; thereafter resume normal activity including sexual intercourse
- fatigue continues for a few weeks after surgery. You are encouraged to return to normal activities early, accepting the fatigue, which although limiting, will resolve progressively and completely.

WHAT CAN GO WRONG:

Although most cases proceed without particular difficulty and have excellent outcomes, surgical complications occur overall in 5% of patients. The list below details complications recognised as common

or serious, but this does not include the rare and extraordinary. Risk of death is approximately 0.03% in generally healthy patients.

AT THE TIME OF AND EARLY AFTER SURGERY:

- Depending on the location and size of stones within the kidney, it may not be possible to clear all of the stone at one operation. Stone remnants may be left to pass spontaneously or may be cleared with a repeat Percutaneous nephrolithotomy a day or two after initial surgery, or mopped up with ESWL (<20%).
- Failed procedure: it may not be possible to gain access to the kidney or the access may be lost partway through the procedure and the operation may have to be abandoned.
- The kidney is very vascular and therefore bleeding may occur during the procedure, again such that the operation has to be abandoned. Blood transfusion may be necessary in 5% of patients. Such bleeding may start up to 2 weeks after the surgery, as the track heals. One in 1000 patients will require subsequent embolisation of a renal vessel causing bleeding, performed radiologically, to stop the bleeding. One in 10,000 patients will require emergency nephrectomy if bleeding is catastrophic and cannot be controlled.
- Some kidney stones harbour infection, which is released with fragmentation during the operation, resulting in bacteraemia and septicaemia. This may require prolonged antibiotic treatment and on occasion, admission to intensive care unit (< 1%).
- Small stone fragments may be displaced down the ureter, resulting in later blockage and pain, and may have to be removed with another procedure, typically ureteroscopy.
- Injury may occur to adjacent organs including colon, with placement of the nephrostomy access sheath (< 1%). Generally, these will settle with conservative management but rarely will require conversion to an open operation.
- Clots (DVT, Pulmonary embolus) are a rare but serious surgical complication
- Numbness or tingling, usually temporary
- Risk of death may be estimated using the nzRISK https://nzrisk.com on-line pre-operative calculator. It has been developed and validated for patients in New Zealand over the age of 18, to help patients and doctors balance benefits and risks of treatment.

LATER POTENTIAL COMPLICATIONS :

- Stone recurrence is not specifically a complication, but reflects some patients potential for stone formation