

## PERCUTANEOUS NEPHROLITHOTOMY (PCNL)

### Introduction

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Percutaneous nephrolithotomy or PCNL is an effective method used to remove very large or branching “staghorn” stones >2cm. The procedure takes about 2-4 hours and has a high chance of clearing all the stones in one setting. It can be combined with ureteroscopy to clear stones in the ureter or around sharp corners.

### What does the procedure involve?

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Under general anaesthesia, a small cut around 1-2cm is made in the flank or back. A nephroscope or telescope is passed into the kidney through a tube under x-ray guidance to find and break up the stones, using a ultrasound waves, laser energy or pneumatic lithotripter (jackhammer). A JJ stent (plastic tube with curls on either end) is placed at the end to ensure that urine can drain freely through the ureter. JJ stents can be removed in two ways, either by leaving a string on the end so it can be pulled out easily or using a telescope for removal in hospital as a day procedure under local anaesthetic.

PCNL video (2:44 mins) <https://www.youtube.com/watch?v=D6vO2ASsQaU>

### What are the alternatives?

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Ureteroscopy and lasertripsy  
Extracorporeal shock wave lithotripsy (ESWL)  
Dissolution therapy (uric acid stones can be dissolved with drugs)  
Observation (stones that are not causing symptoms can be watched)  
Open nephrolithotomy (surgical removal through a large incision)

### What are the risks of surgery?

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#### Common (10-20%)

Bleeding  
Infection  
Minor bruising or discomfort in the back  
Mild frequency, urgency or stinging when passing urine

#### Occasional (1-10%)

Blood transfusion  
Damage to surrounding tissues or organs (lung, liver, spleen, bowel)  
Incomplete stone clearance requiring further surgery  
Ureteric blockage from stone fragments

### Rare (<1%)

Permanent damage to the kidney

Scar tissue or vascular malformations - further surgery

Anaesthetic or cardiorespiratory problems - intensive care

Chest infection, clots in the legs and lung, stroke, heart attack, death

### What should I do before surgery?

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- Do not eat, drink, or chew gum for 6 hours before surgery
- If you are obese, losing weight makes surgery easier and improves outcomes
- If you smoke, quitting makes anaesthesia safer and reduces complication rates
- If you are on blood-thinning medication, discuss this with Dr Ooi

### What should I expect after surgery?

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The usual hospital stay is 1-2 nights. Sips of fluid are provided initially, followed by light diet. Please ask for pain or nausea medication if required. The nurses will assist with daily activities and teach you how to manage any tubes or catheters. If you have a JJ stent with a string taped to the genital area, try not to pull it out accidentally.

### Discharge information

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Drink 2L of fluid each day and have a normal diet. Use Ural sachets every 4 hours to relieve any stinging or burning when passing urine. Restart blood-thinning medications after discharge if there are no bleeding issues. If you have a JJ stent, you will see small amounts of blood in the urine intermittently and experience pelvic or back discomfort during physical activities or when passing urine (pressure transmitted to the kidney through the JJ stent). These symptoms will resolve completely once the stent is removed. If simple pain killers are not enough, ask Dr Ooi for other medications to relieve the symptoms. Please contact Dr Ooi's rooms, the hospital, ward or nurse manager if you have any concerns, such as excessive pain, bleeding, difficulty emptying your bladder, fever or feel unwell. General advice is also available on our website in the Procedures section.

### Appointments

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Dr Ooi will see you to remove the JJ stent 5-7 days after. If you live remotely and things are going well, you may prefer to remove the stent yourself and have a telephone call for follow-up instead. Please ensure you have some strong pain killers available as it is common to have pain in the first 24 hours after stent removal. If there are residual fragments, Dr Ooi will schedule a second operation to clear them.

### How can I prevent getting more stones in the future?

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[https://www.health.qld.gov.au/data/assets/pdf\\_file/0033/429729/diet-kidney-stones.pdf](https://www.health.qld.gov.au/data/assets/pdf_file/0033/429729/diet-kidney-stones.pdf)