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Urology in Practice

Dinesh Patel – Urological Surgeon

Kidney stones are a common diagnosis in general practice and are also frequently detected incidentally on imaging tests. Many stones can be treated by non-invasive or minimally invasive surgery. This article helps to explain how I decide which treatment is best suited to each individual I treat.

Surgical Treatment of Kidney Stones

Renal stones are frequently diagnosed in general practice. Sometimes they may be symptomatic but increasingly stones are found incidentally on imaging performed for other medical conditions. While most patients with a diagnosis of kidney stones end up being referred to a Urological Surgeon, I think it's important for General Practitioners to understand which individuals need specialist referral and the different treatment modalities that are commonly used.

What Are The Symptoms Of Stones In The Kidney? We're all familiar with the usual presentation of ureteric stones causing renal obstruction- severe loin to groin pain, nausea and vomiting but stones within the kidneys don't cause severe symptoms. In fact, **most renal stones are asymptomatic**. Some individuals may experience milder back pain from renal stones, and this is probably due to the stone(s) causing intermittent obstruction of the calyx in which it was formed. Occasionally haematuria (micro or macroscopic) may be noted and, in the case of staghorn or infection stones, recurrent UTI or persistent asymptomatic bacteruria are a feature. In this situation, bacteruria persists until the stone has been fully cleared.

Do Asymptomatic Kidney Stones Need To Be Treated? Not all kidney stones need to be treated. Increasingly, because of the frequency with which patients are undergoing medical imaging, asymptomatic, tiny (<4mm in size) kidney stones are being diagnosed. Generally, these stones can be left alone or monitored, rather than treated.

Contact Details

Consulting Suites
Sydney Southwest Private Hospital
40 Bigge St Liverpool 2170

Suite 205, Level 2
308-312 Beamish St Campsie 2194

For all appointments:

Tel: 8197 1900
Fax: 9011 5251

reception@urologicalsurgeon.com.au
urologicalsurgeon.com.au

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As a general rule, asymptomatic renal stones ≥ 4mm should be treated to prevent future episodes of acute ureteric colic. Stones less than 4mm in size can usually be managed by observation

Surgical Treatment of Kidney Stones (continued)

What Is The Best Imaging To Perform? A common scenario I see is the patient who has had a urinary tract ultrasound which reports renal stones, usually in the setting of some chronic back or flank pain. **However, ultrasound alone is notoriously unreliable in the diagnosis and management of urinary tract stones. About 50 percent of these patients will not have any stones detected on a subsequent non-contrast CT KUB, which is the imaging test of choice urinary tract stones.** A good quality CT scan will detect a significant stone virtually every time, help to exclude other differential diagnoses, and also guide further management. A plain Xray of the urinary tract (KUB Xray) is also very useful to correlate with a CT KUB, as it can distinguish between calcium stones (radiopaque) and uric acid stones (radiolucent), and uses less radiation than CT in monitoring calcium stones.

What Procedures Are Used To Treat Renal Stones? The 3 main procedures from least to most invasive are: Shockwave Lithotripsy (SWL), Flexible ureterorenoscopy (URS) and Percutaneous Nephrolithotomy (PCNL).

Shockwave Lithotripsy (SWL) By far the least invasive and least painful treatment for renal stones. Powerful sound waves (shockwaves) are generated by an external energy source (Lithotripter) and are then focused through a column of fluid which is placed against the patient's flank. The shockwaves pass through soft tissues safely but when they reach a hard object (the stone) they cause it to cavitate into small pieces which are then passed out down the ureter. **Because SWL is relatively painless and well-tolerated, it is ideal for asymptomatic small renal stones (≤ 10mm).** It is performed as day surgery under general anaesthesia. About 80-85% of small renal stones can be effectively treated this way. As a VMO at the NSW Lithotripter Centre, who performs SWL regularly, I have achieved excellent results with minimal morbidity in a large number of patients.

Flexible Ureterorenoscopy (URS) A slender, flexible fibreoptic or video scope is placed retrogradely through the urinary tract into the kidney, and a Holmium laser fibre is deployed through the scope and used to fragment the stone. Although more invasive than SWL, it is a more direct treatment and has a higher overall stone clearance rate, because the vast majority of stones (>95%) can be reached and fragmented into very tiny pieces or dust. It is ideal for stones ≥10mm, or in cases where multiple calculi are scattered through the kidney or where renal anatomy may render SWL less successful (eg lower calyceal stones). **This is a very safe, precise and effective treatment but usually requires the temporary placement of a ureteric stent. There is usually some post-operative pain or discomfort after URS and while the stent is in situ, so patients must be warned of this preoperatively.**

Percutaneous Nephrolithotomy (PCNL) A small incision is made in the patient's back and a tract is dilated through the renal tissue into the collecting system. A nephroscope (larger diameter scope) and stone fragmenting device are placed through a plastic sheath into the kidney and the stone is broken and extracted. It is a much more invasive treatment and is reserved for very large renal stones, usually ≥25mm in size, where URS is impractical. **Less than 2 percent of renal stone patients will require PCNL, as most stones can be treated by the more minimally invasive techniques mentioned above.**

A Ureteric Stent is usually placed after URS because the ureter has to be surgically dilated to permit passage of the scope up to the kidney. This results in temporary oedema in the ureteric wall, which can then cause ureteric obstruction and severe pain in the immediate post-operative period. A stent allows drainage while the oedema resolves. In addition, a stent can prevent ureteric obstruction when multiple stone fragments are being passed post-operatively. Stents can cause frequency, urgency, dysuria and loin pain in some patients.

The information provided above is only intended as a management guide. If you require any further advice or would like an opinion on one of your patients, please contact my office on 8197 1900 or email reception@urologicalsurgeon.com.au. I am now using secure transmission for all correspondence with ARGUS.