

KIDNEY STONES

Background

Kidney stones that move into the ureter (the narrow tube that drains each kidney) often cause a lot of pain. If the stones measure 5mm or less in diameter then most will eventually pass spontaneously.

Expectant management

This is commonly used where it can be expected that a stone has a good chance of passing spontaneously. The following outlines the management plan:

1. Pain relief

Whilst waiting for a stone to pass then the most important aspect is that of pain relief. The following may be prescribed:

- a. Paracetamol: take up to 8 tablets per day
- b. Tramadol: stronger oral pain relief that can be taken up to 400mg per day.
- c. Anti-inflammatory medication such as indomethacin.
- d. Flomaxtra: this tablet helps relax the ureter. This both improves the chances of spontaneous stone passage and helps with pain relief.

Pain is variable. Usually this is worst out the outset and lasts for 24-48 hours. After that pain may occur intermittently and rather unpredictably.

2. Strain all urine and retrieve any stone that may pass

This can be achieved by voiding through an old tea strainer or passing all urine into an old container to identify the stone. Usually you will NOT feel the stone pass out. The painful part is passing the stone from the kidney to the bladder, passing the stone from the bladder through the urethra is rarely noticeable.

3. Fluid intake

Drinking large amounts of fluid is NOT necessary beyond the first day or so. Stones move down by being propelled by the ureter, not by being “flushed” out by urine. It is vitally important though to maintain a high fluid intake in the future to help avoid development of further stones.

4. How long to wait

Generally we will leave a stone for up to around 3 weeks if we assess it as having a good chance of passing spontaneously and there is evidence of stone progression. Arrangements will be made for follow up x-rays to ensure that the stone has passed if no stone has been retrieved. Note that being pain free does not mean that the stone has passed: we have to definitively confirm this.

5. Bladder symptoms

As the stone passes through the bladder wall you may note increased urinary frequency and urgency. This is a good sign: it means your stone is about to pass.

When to call for help

Call these rooms if any of the following occur:

1. Symptoms or signs of infection

These symptoms include shivering, shaking and feeling unwell with a high temperature (above 38.0°C). This is a Urological emergency. Having a kidney that is blocked from a stone then develops an infection can be very serious and must be treated with both antibiotics and drainage of the kidney.

2. Uncontrolled pain

Treatment alternatives

Urinary tract stones may be treated in a variety of ways including:

- **Open surgery:** this is rarely required these days.
- **Percutaneous nephrolithotomy:** this involves making a small cut on the back and passing a telescope through the skin and through the kidney to reach the stone. The stone is then removed whole or, if it is too big for this, then it is fragmented and removed.
- **Extracorporeal shock wave lithotripsy (ESWL):** this involves focussing shock waves onto a stone from outside using a special lithotripsy machine.
- **Dissolution treatment:** this is suitable for stones that are made of uric acid.
- **No treatment:** this is suitable for some small stones lying inside the kidney and causing no problems or where there is a small stone in the ureter that can be expected to pass spontaneously within a few weeks.

Each of these methods have their own advantages and disadvantages and may be recommended by Mr Davies according to the exact clinical circumstances.

Deciding to have flexible ureteroscopic lasertripsy

Flexible ureteroscopic lasertripsy is a commonly performed and generally very safe procedure. However, in order to give informed consent, anyone deciding whether or not to have this procedure needs to be aware of the possible side effects and the risk of complications.

Side-effects

Side-effects are the unwanted but usually mild and temporary effects of a successful procedure. For flexible ureteroscopic lasertripsy they may include:

- A small amount of discomfort after the procedure – this will settle in a few hours.
- A stinging sensation when passing urine for a couple of days after the procedure.
- A small amount of blood in the urine – this is quite normal and should clear up gradually within 48 hours. If a stent has been left in place then bleeding can occur at any time and is of no cause for alarm.
- Stent related symptoms: see the separate information booklet.

Complications

Complications are unexpected problems that can occur during or after the procedure. Most people are not affected. However, specific possible complications of a flexible ureteroscopic lasertripsy include:

- Injury to the ureter from the ureteroscope, placement of guide wires or the laser. Ureteric injury is uncommon and is usually treated by placing a JJ stent and allowing the ureter to heal by itself.
- Ureteric strictures: these are narrowings of the ureter caused by scarring.
- Development of a urinary tract infection requiring treatment with antibiotics. Intravenous antibiotics are routinely given at the time of the procedure to help prevent against infection occurring.
- Stone fragments may pile up upon each other inside the ureter and get stuck (“steinstrasse”). This may require further treatment.
- Stone fragments successfully fragmented and lying inside the kidney may not pass out, particularly if they come to lie in the lower part of the drainage system of the kidney.
- Very rarely, the urethra or bladder may be damaged. This can lead to bleeding and infection, which may require treatment with medicines or further surgery

Follow up

Dr Hockings will usually arrange to review you about a fortnight following your procedure. Arrangements will be made for you to have an X-ray performed just prior to this review so that an assessment of any remaining stone fragments can be made.

Prevention of further stones

- Maintain a high fluid intake to keep your urine dilute.

ALL ABOUT JJ STENTS

In patients who have, or might have, an obstruction (blockage) of the kidney, an internal drainage tube called a 'stent' is commonly placed in the ureter, between the kidney and the bladder. This is placed there in order to temporarily relieve the obstruction.

Mr Davies is planning to use such a stent for you.

The information presented here explains the benefits to be derived from ureteric stents and mentions some of the drawbacks that patients might experience. It is divided into two parts. The first part explains about the urinary system, obstruction of the kidneys and treatment of this obstruction using ureteric stents. The second part describes what to expect while the stent is in place and any possible side effects.

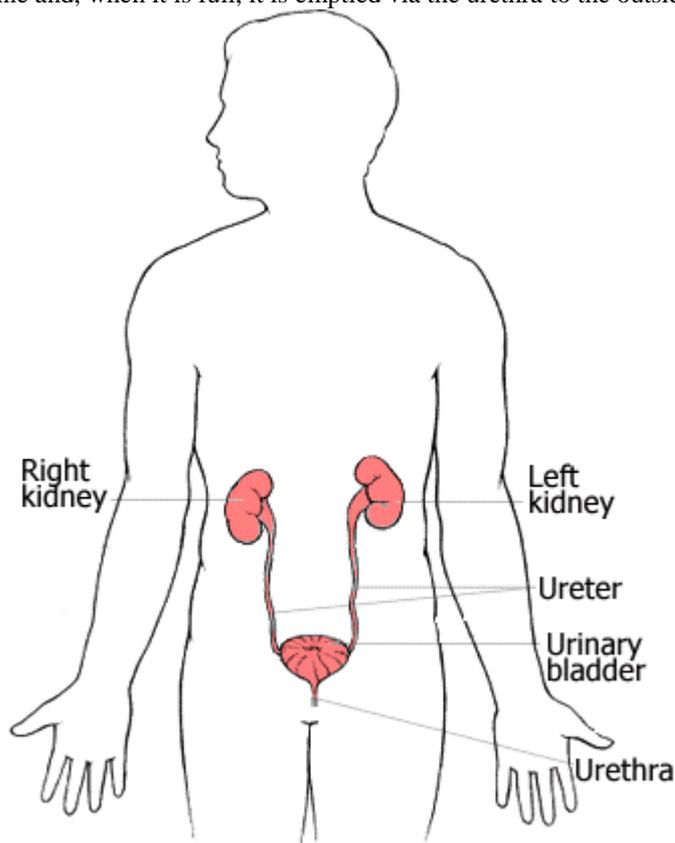
Mr Davies will explain the specific details applicable to you.

This information is designed for use by patients who are going to have a stent inserted.

THE URINARY SYSTEM AND URETERIC STENTS

The urinary system and the ureter

The kidneys produce urine. Normally there are two kidneys situated in the upper part of the abdomen, towards the back. The urine formed in the kidney is carried to the bladder by a fine muscular tube called a ureter. The urinary bladder acts as a reservoir for the urine and, when it is full, it is emptied via the urethra to the outside.



How does a kidney become obstructed?

Common causes of obstruction of the kidneys and ureter are:

- A kidney stone or its fragment moving into the ureter, either spontaneously, or occasionally following treatment for a kidney or ureteric stone.
- Narrowing (stricture) of the ureter anywhere along its path. This can be due to various causes e.g. scarring of wall of the ureter, cancers or congenital narrowing of the area where the ureter starts from the kidney (pelvi-ureteric junction).
- Temporarily, following an operation or after an instrument has been inserted into the ureter and kidneys.
- Occasionally, obstruction can occur because of diseases of the prostate or tumours of the urinary system.

Dr Hockings will provide further details applicable to you.

What are the effects of obstruction?

Whenever there is an obstruction, pressure builds up behind the kidney. Due to high pressure, the function of the kidneys starts to suffer over a period of weeks and pain commonly occurs. The obstruction can also cause stagnation of the urine, which can lead to infection and, ultimately, damage to the affected kidney. It is, therefore, important to relieve or prevent obstruction of the kidney.

FIGURE 1 - The urinary tract

How can the obstruction be relieved?

It is not always possible to identify what has caused an obstruction and to treat this immediately. It is therefore essential to relieve the obstruction on a temporary basis before treatment is carried out. Also, following an operation on the ureters, it takes time for the ureters to heal and a temporary measure to prevent obstruction becomes essential. This is commonly achieved by inserting a ureteric stent to make a channel for the urine to pass and allow the kidneys to drain.

What is a Ureteric Stent?

A ureteric stent is a specially designed hollow tube, made of a flexible plastic material that is placed in the ureter. The length of the stents used in adult patients varies between 22 to 28 cm. Generally they measure 2mm in diameter. Although there are different types of stents (including metallic ones), all of them serve the same purpose (see Figure 2).

Dr Hockings can explain in detail about the different types of stents.

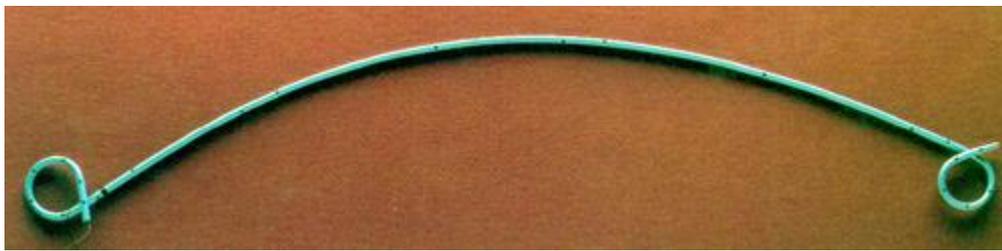


FIGURE 2 – JJ stent

How does a stent stay in place?

The stents are designed to stay in the urinary system by having both the ends coiled. The top end coils in the kidney and the lower end coils inside the bladder to prevent its displacement. The stents are flexible enough to withstand various body movements.

How is a ureteric stent put in place?

Usually a stent is placed under a general anaesthetic using a special telescope (cystoscope) which is passed through the urethra into the bladder. The stents are then placed in the ureter and kidney via the opening of the ureter in the bladder. The stent may be inserted as an additional part of an operation on the ureter and kidney (e.g. ureteroscopy). Occasionally they are placed from the kidney down to the bladder using special x-ray techniques. The correct position of a stent is checked by taking an x-ray.

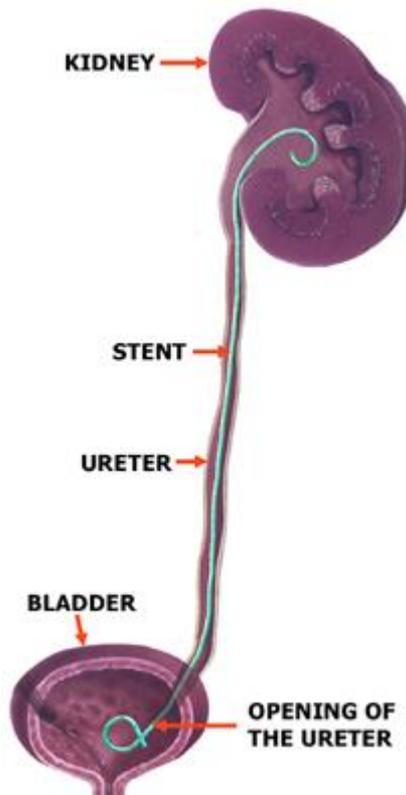


FIGURE 3 - A stent placed inside the urinary system

How long will the stent stay in the body?

There is no hard and fast rule about this. The stent has to be kept in place as long as necessary, i.e. until the obstruction is relieved. This depends on the cause of obstruction and the nature of its treatment. **In the majority of patients, the stents are required for only a short duration**, from a week to a few months. However, a stent in the right position can stay in for up to three months without the need to replace it. When the underlying problem is not a kidney stone, the stent can stay in even longer. There are special stents, which may be left in for a much longer time. **No ureteric stent can be left inside forever.**

Dr Hockings will tell you for how long he expects your stent to remain in place.

How is a stent removed?

Usually this is achieved using a cystoscope, under local anaesthesia as a brief outpatient procedure. Sometimes a stent can be left with a thread attached to its lower end that stays outside the body through the urethra. Such stents can be removed by just gently pulling on this thread. Although patients commonly fear removing a stent in this way, it is not at all painful.

Is there an alternative option to the use of a stent?

There is no simple alternative option. In some patients, a tube draining the urine to the outside called a 'nephrostomy tube', may be placed in the kidney. However, this involves carrying a urine collection bag attached to your back, which requires proper care.

LIVING WITH A URETERIC STENT

Ureteric stents are designed to allow people to lead as normal a life as possible. However, they may not be without side effects. In placing a stent, there is a balance between its advantages in relieving the obstruction and any possible disadvantages in the form of side effects. Most side effects are not a danger to your health or your kidneys, although they can be a nuisance. Different patients may experience side effects to a different degree. Many have no symptoms at all.

What are the possible side effects associated with a stent?

Many patients do not experience problems with the stents. In the majority of the patients experiencing side effects they are minor and tolerable. However sometimes they can be moderate to severe in nature. Probably most patients with a stent in place will be aware of its presence in some way.

Urinary symptoms

There might be:

- An increased frequency of passing urine.
- The need to rush to pass urine (urgency).
- A small amount of blood in the urine. This is quite common and the situation can improve with a greater fluid intake.
- The stent can also result in a sensation of incomplete emptying of the bladder.

These effects are possibly due to the presence of the stent inside the bladder causing mechanical irritation. These effects resolve when the stent is removed.

Discomfort or pain

Stents can cause discomfort or pain, commonly in the bladder and kidney (loin) area, but sometimes in other areas such as the groin, urethra and genitals. The discomfort or pain may be more noticeable after physical activities and during or after passing urine.

Urinary tract infection

The presence of a stent, along with the underlying kidney problem, makes it more likely that you could get a urinary tract infection. Some of the symptoms that you may experience if you get a urinary tract infection are raised temperature, increased pain or discomfort in the kidney or bladder area, a burning sensation while passing urine and feeling unwell. This usually requires treatment with antibiotics. Note that some common stent bladder symptoms outlined above may mimic a urinary tract infection. Furthermore, a stent will inevitably cause blood, white cells and protein to be detected in your urine should a urine dip test be performed. If a urine infection is suspected then it is important that a proper mid stream urine specimen is sent for culture rather than any reliance placed upon the simple dip test.

What other complications are possible?

- The stent may become blocked.
- The stent may not work at all.
- Occasionally a stent may develop a crystal coating on its surface. Usually this is not a significant problem. If a stent has been forgotten about though then stone formation on the stent can become a significant problem. ***Stents cannot remain in place indefinitely and must be removed when no longer needed or changed every three months. If you have a stent and your follow up is overlooked or missed for any reason then you must contact Western Urology.***
- Very occasionally a stent may get displaced, usually slipping towards the bladder, and it may even fall out.
- If a string has been left on the stent and gets accidentally caught or pulled then the stent may be displaced, leaving the lower end of the stent projecting below the sphincter muscle with resultant incontinence.
- Very rarely stents can form a knot or break.

Duration of the side effects - can they improve?

There is some evidence that some of the symptoms, such as pain while passing urine and blood in the urine, may improve with time. However, this remains unpredictable. It has been reported that around 20-70% of patients with a stent experience one or more of these side effects. Medical science and the stent manufacturers are working to develop a stent that will cause the least possible side effects.

Can the side effects interfere with daily life?

Stents are not expected to cause much disruption to your normal daily life. However, you may experience some side effects that can cause some problems, either directly or indirectly.

Physical activities and sports

You can carry on with various physical activities while the stent is in place provided the underlying kidney condition and your health allows you to do it. However, you may experience some discomfort in the kidney area and passing of blood in your urine, especially if sports and strenuous physical activities are involved.

Work activities

You can continue to work normally with the stent inside your body. However, if the work involves lot of physical activities, you may experience more discomfort. Occasionally side effects, such as urinary symptoms and pain associated with the stent, may make you feel tired. If the stent causes significant problems, you can discuss it with your manager and colleagues so that possible temporary adjustments can be made at your work place.

Social life and interaction

The presence of a stent should not affect this in a significant way. In case you get urinary symptoms such as, increased frequency and urgency, you may need to use public toilets more frequently while taking part in outdoor activities. Occasionally you may need a little more help from family members or colleagues, because of any pain or tiredness you may feel.

Travel and holidays

It is possible to travel with a stent in place, provided the underlying kidney condition and your general health allows this. However, presence of significant side effects associated with the stent may make travel and holidays less enjoyable. Also there is a small possibility that you may require additional medical help while the stent is in place.

Sex

There are no restrictions on your sex life due to the presence of a stent. Few patients experience discomfort during sexual activities. Occasionally the side effects associated with the stent may have an effect on the sexual desire. If you have a stent with a thread coming outside the body through the urethra, sexual activities may be difficult. Care will also be required so as not to dislodge the thread, which could then in turn displace the stent.

Essentially you can do everything with a stent in place that you were doing before within the limits of comfort.

What care do I need to take when I have a stent?

- ***It is essential that you maintain a higher than normal fluid intake.*** The best way of judging whether you're drinking enough is to drink enough to keep the colour of your urine very light. This will help to cut down the risk of getting an infection and will reduce the amount of blood in the urine. It will also help in the treatment of stones.
- If you experience bothersome pain you can take painkillers for relief such as Paracetamol (eg. Panadol) or a paracetamol/codeine combination for stronger pain (eg. Panadeine).
- If you have got a stent with a thread coming down from the urethra outside the body, then more care will be needed so as not to dislodge the thread. ***If in any doubt please seek medical help.***

When should I call for a help?

You should contact Dr Hockings or your GP:

- If you experience a constant and unbearable pain associated with the stent.
- If you have symptoms of urinary tract infection as mentioned above (e.g. a raised temperature, pain during passing urine and feeling unwell).
- The stent gets dislodged or falls out.
- If you notice a significant increase in the amount of blood in your urine.
- If you are unable to pass urine.
- If your stent has been in place for more than 3 months and you don't have some follow-up arranged with Mr Davies.
- If you develop incontinence (wetting)