



# Shock wave lithotripsy for kidney stones



Shock wave lithotripsy is a non-surgical treatment to pulverize kidney stones so that the fragments can pass more easily and with less pain.

**S**hock wave lithotripsy (SWL) is a non-surgical treatment in which high energy shock waves are used to pulverize a stone into smaller fragments which can pass more easily and with less pain.

A special machine is used to generate shock waves. X-rays or ultrasound are used to focus the shock waves precisely on the stone. The shock waves pass harmlessly through body tissues until they hit the kidney stone causing it to break up. The fragments can then flush out in the urine. This machine may not be available at your local hospital.

## Limitations of shock wave lithotripsy

In some situations, SWL may not be possible or effective. These include:

- very large stones
- very hard stones (although this may not be apparent prior to treatment)
- patients who are very overweight, because shock waves may not be able to reach the stone
- during pregnancy

Other treatment options may be considered for these patients.

Special precautions may be required for SWL in those with cardiac pacemakers. If you have a pacemaker, please advise the lithotripsy unit in advance.

Some stones will require more than one SWL treatment for complete clearance.

In some cases, a stent will need to be placed in the ureter in advance and then subsequently removed after SWL.

## Before your treatment

Your urologist will determine whether your stone problem can be treated with SWL depending on the size, number, location and other characteristics of the stone(s). Recent imaging, by X-ray, ultrasound or CT scan, is necessary prior to your treatment. **Your imaging studies must be available for your SWL appointment.**

Urine and blood tests, as well as an electrocardiogram, may be required. Urinary infection should be controlled with antibiotics before SWL.

SWL generally is performed as an out-patient procedure. Overnight hospital admission is rarely necessary.

You may be advised to restrict your diet and fluid consumption for several hours prior to your treatment. Special instructions will be given for patients with diabetes.

## Medications

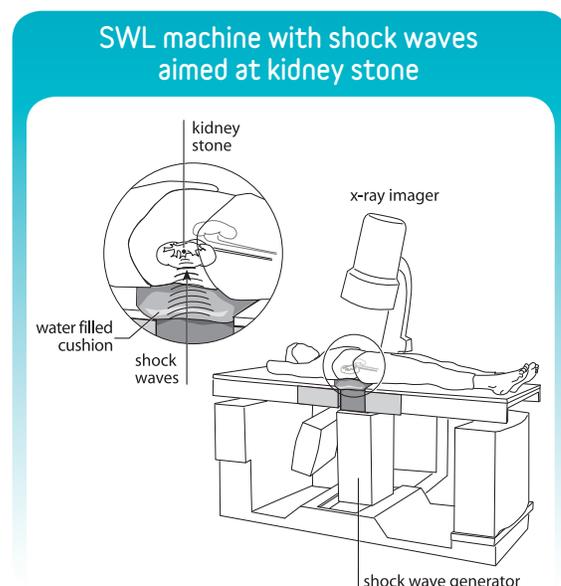
Most of your medications can be taken as usual. Bring a list of current medications to your SWL appointment.

If you are taking any blood thinners (including aspirin) you must contact your doctor for special instructions. Do not discontinue them without consulting with your doctor. **Shock wave lithotripsy cannot be performed if you have not stopped your blood thinners prior to your treatment date.**

## Treatment

**SWL may be cancelled if you have not made arrangements to be taken home by a responsible adult after your treatment.**

Information regarding your stone problem and general health will be collected by a doctor or nurse. An X-ray may be taken if recent imaging studies are not available. An intravenous line will be started to administer a sedative to keep you relaxed and painkilling medication if required.



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You will be positioned comfortably on the lithotripsy machine after which the stone will be targeted with X-rays or ultrasound. A water-filled cushion will be pressed between the shock wave generator and the body to conduct the shock waves. It is important to lie still during your treatment so that the shock waves can be targeted accurately on the stone.

During the procedure you will hear a clicking sound and feel a tapping sensation as each shock wave enters the body. Shock waves are generated over 30 – 60 minutes, until the stone is adequately fragmented or a maximum number of shocks has been delivered.

You will be monitored for at least one hour to ensure that you are comfortable enough to go home with an accompanying person. You may receive a prescription for pain killers and instructions regarding a follow-up appointment with your doctor within a few weeks.

Long distance travel is inadvisable immediately after SWL. If you live far from the treating hospital, it is best to spend the night after treatment in that city so that any early problems can be addressed there. You should be able to return home the next day.

## After your treatment

You may pass stone fragments for a few weeks after SWL. Many patients treated with SWL are stone free by three months after their treatment. There may be pain and mild bruising of the skin where the shock waves entered the body. Aching back or flank pain may accompany the passage of stone fragments, particularly in the first few days. Use your pain killers as needed. Mild pain can often be controlled with acetaminophen (e.g. Tylenol™) or ibuprofen (e.g. Advil™).

It is not unusual to see blood in the urine for up to one week. Clearing of blood and flushing stone fragments will be facilitated by drinking at least two litres of fluid every day for the first few weeks. Most people are able to return to work and resume their usual activities when they are comfortable, usually within a day or two of their SWL treatment.

You should see a urologist within a few weeks after your treatment to determine how well it worked. An x-ray should be obtained immediately prior to that follow-up visit.

## Risks of shock wave lithotripsy

Heavy bleeding is rare after SWL. Internal bruising in or around the treated kidney is occasionally seen. Fever, chills or shakes after SWL may indicate infection. Medical attention should be sought promptly so that treatment can be provided if necessary. Occasionally, blockage of a ureter with stone fragments after SWL will require additional treatment, including surgery. Prolonged pain may indicate blockage and if you have severe pain that is not getting better after taking pain pills, seek medical attention.

Your SWL treatment has been scheduled for:  
\_\_\_\_\_ (time)  
on \_\_\_\_\_ (date)  
at \_\_\_\_\_  
\_\_\_\_\_ (location)

### Checklist of items required for SWL:

- Bring
  - all recent **x-rays** with you or ensure that they have been sent ahead by your doctor
  - laboratory test results
  - a list of your **medications**
- Advise ahead if you
  - are **pregnant**
  - have a heart **pacemaker**
- Inquire about instructions for **fasting** or **diet restriction** before your treatment.
- Inquire about the use of medication, especially **blood thinners**, aspirin or anti-inflammatory drugs.
- Arrange for a responsible adult to drive you home.**



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