



Shock Wave Lithotripsy (SWL)

What is shock wave lithotripsy?

Shock Wave Lithotripsy (SWL) is the most common treatment for kidney stones in the U.S. Shock waves from outside the body are targeted at a kidney stone causing the stone to fragment. SWL is a nonsurgical technique for treating stones in the kidney or ureter (the tube going from the kidney to the bladder) using high-energy shock waves. Stones are broken into "stone dust" or fragments that are small enough to pass in urine. If large pieces remain, another treatment can be performed.

When can SWL be used?

SWL works better with some stones than others. Very large stones cannot be treated this way. The size and shape of stone, where it is lodged in your urinary tract, your health, and your kidneys' health will be part of the decision to use it. Stones that are smaller than 2 cm in diameter are the best size for SWL. The treatment might not be effective in very large ones. SWL is more appropriate for some people than others.

Does the patient need anesthesia?

Yes, even though there is no incision, there will be pain. You and your doctor will discuss whether light sedation and local or general anesthetics will be used. The choice depends on the technique, the type of stone and the patient. SWL can be delivered with just mild sedation, but in general, some type of anesthesia--either local, regional or general--is used to help the patient remain still, reduce any discomfort, and this improves the breaking of the stone.

Does the patient need to be hospitalized?

Not usually. In most cases, lithotripsy is done on an outpatient basis.

What are the advantages and disadvantages of this treatment?

The main advantage of this treatment is that it treats kidney stones without an incision. As a result, hospital stays and recovery time are reduced. But, while SWL can work, it doesn't always work. After SWL, about 50% of people will be stone free within a month. In others, stone fragments of various sizes remain. Sometimes a repeat procedure (or a different procedure) is needed.

SWL has the potential to cause kidney injury. Whether or not SWL causes or leads to the development of high blood pressure and diabetes remains controversial. These possibilities are still being studied.

What can the patient expect after treatment?

The recovery time is usually fairly brief. After treatment, the patient can get up to walk almost at once. Many people can fully resume daily activities within one to two days. Special diets are not required, but drinking plenty of water helps the stone fragments pass. For several weeks, you may pass stone fragments.

What will happen after I leave the hospital?

After treatment, you will have blood in your urine and possibly abdominal pain or aching for several days. Other people experience a severe cramping pain as shattered stone fragments make their way out of the body. Oral pain medication and drinking lots of water will help relieve symptoms.

Sometimes, the stone is not completely broken up, or big pieces remain and additional treatments may be needed.

Rarely, more serious problems occur, such as bleeding near the kidney that might require a blood transfusion, damage to the area around the stone, or pieces of the stone blocking the flow of urine.

Call your doctor if you feel the strong need to urinate even after you empty your bladder or if you are in extreme pain even when taking your pain medicine.

How successful is shock wave lithotripsy?

In those patients who are thought to be good candidates for this treatment, some 50-75% are found to be free of stones within three months of SWL treatment. The highest success rates seem to be in those patients with smaller stones (such as less than 1 cm).

After treatment, some patients may still have stone fragments that are too large to be passed. These can be treated again if necessary with shock waves or with another treatment.

What about stones in the ureter?

Ureteral stones that occur near the kidney can be treated by SWL with or without moving the stone to a better spot. Ureteral stones that occur lower (near the bladder) may also be treated with SWL, but they usually require ureteroscopy especially if they are large (more than 1 cm in diameter).