

## Kidney Stone Signs and Symptoms

Kidney stones are conglomerations of crystals that form when concentrations of minerals in the urine become very high. As their name implies, stones almost always start in the kidneys. They may cause problems there, or may not be noticed until they move into the ureter (the tube that connects the kidney to the urinary bladder). Once stones enter into the ureter they can obstruct the drainage of urine which generally causes symptoms such as pain in the upper back (i.e., the flank) or lower abdomen, nausea, vomiting, and blood in the urine. Many stones will pass down the ureter, into the bladder and then be voided with urine. Occasionally stones can remain lodged in the ureter or within the bladder.

## Kidney Stone Treatment Options

We work with patients in every stage of their condition, creating a personalized plan whether surgery is needed or not. We also try to identify factors that may be causing the stones, so we can keep current stones from getting larger and reduce the risk of developing future stones.

When suspected of having a kidney stone, we take a history, perform a physical exam, and obtain radiological imaging. Studies may include a plain x-ray of the abdomen, a renal ultrasound, or a CT scan. They help us determine the location of the stone, its size, the degree to which the stone may be causing an obstruction to urine flow, and what types of therapy would be appropriate for management.

## Conservative Management

In cases when the stone has moved into the ureter, especially if the stone is small (less than 0.5 centimeters), we often recommend conservative management. We do this because many smaller stones will pass on their own, allowing patients to avoid surgery. Conservative management includes pain control (usually with acetaminophen and a non-steroidal anti-inflammatory drug like ibuprofen), hydration (6 to 8 glasses of water a day), and medical expulsive therapy using an alpha blocker (e.g., tamsulosin). Many stones will pass with this management, without requiring a surgical procedure.

## Minimally Invasive Surgical Treatments for Kidney Stones

Factors that influence stone passage include the stone's size and location. The larger a stone is, the less likely that it will pass without surgery. Surgical treatment is usually recommended for stones 0.5 centimeters in size and larger, as well as for patients who fail conservative management. The procedures used today to remove stones are minimally invasive and highly effective. The most common techniques include shock wave lithotripsy, ureteroscopy with laser lithotripsy, and percutaneous nephrolithotomy.

Our endourology team performs over a thousand of these procedures every year, using the latest technology.

**Shockwave lithotripsy (SWL)** is the least invasive procedure and is done on an outpatient basis. Using X-ray or ultrasound imaging to identify the stone, shockwaves are applied from outside the body to break the stone into smaller fragments that are then passed in the urine. SWL is an option for kidney stones up to 2 centimeters in size that are not located in the lower part of kidney, depending on other patient factors.

**Ureteroscopy with laser lithotripsy (URS)** may be used for stones up to 2 centimeters in size located anywhere in the ureter or kidney. This procedure involves passing a small diameter fiberoptic ureteroscope through the bladder and into the ureter, allowing the surgeon to see the stone. A laser is then used to break the stone into smaller pieces that can be removed or passed in the urine. URS is especially useful for ureteral stones, those located in the lower part of the kidney, and those that are resistant to SWL.

**Percutaneous nephrolithotomy (PCNL)** is the best option for larger kidney stones (i.e., those greater than 2 centimeters in size) or when there are other complicating anatomic factors. PCNL involves making a half-inch incision in the back through which the surgeon extracts stones using a nephroscope. Patients typically require a one-night hospital stay, followed by a brief recovery period at home.

If you are a patient looking to receive kind and compassionate care at the leading urologic practice **in Michigan, call 734-936-7030 to make an appointment.** If you are a Health Provider looking to refer a patient, please visit the [Health Provider informational site](#).