

## Five Ways to Prevent Kidney Stones: From Lemonade to Surgery

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**W**e've all heard the expression, "when life gives you lemons, make lemonade." Passing a kidney stone would qualify for one of life's "lemons," but did you know that drinking lemonade has been shown to prevent them?

Drinking lemonade is one of five ways you can prevent kidney stones, according to Roger L. Sur, MD, director of UC San Diego Comprehensive Kidney Stone Center. Additionally, you can drink plenty of fluids and reduce your intake of salt, dietary calcium and protein.



[Roger L. Sur, MD](#), director of UC San Diego Comprehensive Kidney Stone Center.

Lemons have the highest concentration of citrate – a natural inhibitor of kidney stone formation – of any citrus fruit. In a recent study conducted by Sur, lemonade therapy – drinking four ounces of reconstituted lemon juice in two liters of water per day – was shown to decrease the rate of stone formation from 1.00 to 0.13 stones per patient.

Other fruit juices have less citrate and are often supplemented with calcium and contain oxalate, one of the principle components of kidney stones. In fact, the most common kidney stone is a

calcium stone, which is composed primarily of calcium oxalate. Calcium stones can be caused by too much salt in your diet, which stimulates calcium excretion in the urine, according to Sur, who adds that reducing salt intake helps to prevent such stones.

Some people will not even know that they have a tiny stone in their kidney until it leaves the kidney and enters the ureter, causing intense pain.



if you have had a kidney stone there is a 50 percent chance of getting another one.

“Back and abdominal pain, blood in the urine, and nausea or vomiting, are the three classic symptoms of kidney stones,” said Sur. “You don’t have to have all three, but any of them will come on quickly and be hard to ignore. When you have extreme pain, you should see your doctor or go to an emergency room right away, especially if a fever is present. The presence of fever indicates that you may have an infection in your blood stream which can be life threatening.”

Another type of stone, called a uric acid stone is formed from uric acid, a waste product normally passed out of the body in the urine. When this crystallizes in the urine, it forms the beginning, or nidus, of a kidney stone that may grow larger over time. Uric acid stones may be caused by a high-protein diet.

Struvite, or infection stones, generally occur with kidney or urinary tract infections and account for 5 percent of all kidney stones. They are often called “staghorn stones” because they are large and look like antlers on a deer.

Cystine stones make up fewer than one percent of kidney stones and are more likely to develop in families with an inherited condition that leads to an excess of the chemical cystine in the urine.

If you have had several kidney stones in the past, or have any existing small stones, then you should prepare a prevention plan with your urologist.

“There is a 50 percent chance of getting another stone within five to ten years if you’ve already had one,” said Sur. “The UCSD Kidney Stone Center can determine the cause of a kidney stone 97 percent of the time through a combination of tests and scans. These provide us with the pertinent information we need in order to create an individualized prevention plan that incorporates dietary changes and the necessary follow-up.”

Although medication therapy is usually the first line of treatment for a kidney stone, surgery is sometimes required. There are several surgical options which include shock wave lithotripsy, percutaneous nephrolithotomy and ureteroscopy with laser lithotripsy.



UCSD's Comprehensive Kidney Stone Center has the highest volume of kidney stone surgery in southern California, using the most minimally invasive techniques available.

“We have come a long way in advancing the surgical treatment of kidney stones,” said Sur, who has performed close to 1,000 ureteroscopies. “Our goal, in fact, is to prevent you from going back to the OR for a repeat surgery. Through our research and clinical practice, we hope to reduce the 50 percent recurrence rate of kidney stones down to zero.”

UCSD’s Comprehensive Kidney Stone Center has the highest volume of kidney stone surgery in southern California, using the most modern and minimally invasive techniques available. The Center also has the region’s only comprehensive metabolic program designed to determine the cause of kidney stones and then prevent them.

For more information on the UCSD Comprehensive Kidney Stone Center, to refer a patient or to request an appointment, please call 619-543-3572.

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