

LOW OXALATE MEAL PLAN

	LITTLE OR NO OXALATE <mg. per serving Eat as desired		MODERATE 2–10 mg. per serving		HIGH >10 mg. per serving Avoid	
Beverages and Juices	Apple juice Grapefruit juice Lemonade Pineapple juice Coke/Pepsi (12 oz. per day)	Water encouraged Note: distilled alcohol, bottled beer, and red or rose wine is also allowed on occasion	Coffee (any kind, 8 oz. per serving) Cranberry juice	Grape juice Orange juice Tomato juice	Draft beer Juice containing berries not allowed	Ovaltine and other beverage mixes Tea and cocoa
Milk (2 or more cups)	Low fat milk Low fat or fat free yogurt	Skim milk Buttermilk				
Meat Group	Eggs Lean lamb Beef Pork	Cheese Poultry Seafood	Sardines		Peanut butter Soybean curd Tofu	
Vegetables	Brussels sprouts Cauliflower Cabbage Mushrooms Onions	Peas Potatoes Radishes Chives	Asparagus Broccoli Carrots Corn Cucumber	Lettuce (iceberg) Lima Beans Tomato (1 small) Turnips	Beets Swiss Chard Collards Escarole Leeks Okra Green Peppers Rutabagas Summer squash	Celery Eggplant Kale Mustard Greens Parsley Spinach Sweet potatoes Watercress Beans - green, dried
Fruits	Avocado Grapefruit Mangoes Cantaloupe Casaba Honeydew	Watermelon Nectarines Plums Cherries Bing	Apple Oranges Pineapple Italian prunes Black currants	Cherries, red sour Apricots Peaches Pears	Blackberries Red currants Goose berries Lime peel Raspberries Strawberries Grapes, Concord	Blueberries Fruit cocktails Lemon peel Orange peel Rhubarb Tangerine
Breads and Starch	Cornflakes Noodles Rice White Bread	Macaroni Oatmeal Spaghetti	Cornbread Sponge Cake		Grits White Corn Soybean Crackers	Wheat Germ Fruit Cake
Fats	Bacon Mayonnaise	Salad Dressing Vegetable Oil			Nuts Peanuts	Pecans
Extra	Jelly (made with allowed fruit) Salt & Pepper	Sugar Soup (with Allowed Ingredients)			Chocolate Cocoa Pepper (more than 1 tsp. per day)	Vegetable soup Tomato Sauce and Soup

Wolf River Office and Surgery Center
1325 Wolf Park Drive, Suite 102
Germantown, TN 38138

Southaven Office
125 Guthrie Drive
Southaven, MS 38671

Methodist North Office
3950 New Covington Pike, Suite 340
Memphis, TN 38128

West Memphis Office
228 West Tyler, Suite 202
West Memphis, AR 72301

phone: 901.252.3400
fax: 901.763.4305

Please visit our website at
www.conradpearson.com

THE CONRAD | PEARSON CLINIC
UROLOGY CENTER OF THE SOUTH

John R. Adams, Jr., M.D., FACS
Ravi D. Chauhan, M.D.
Lynn W. Conrad, M.D., FACS
Paul R. Eber, M.D.
Howard B. Hasen, Jr., M.D.
H. David Hickey, Jr., M.D., FACS

Robert S. Hollabaugh, Jr., M.D., FACS
Perry J. Larimer, M.D., FACS
H. Benjamin Maddux, Jr., M.D., FACS
H. Michael McSwain, M.D., FACS
Richard M. Pearson, M.D., FACS
Thomas B. Shelton, M.D., FACS



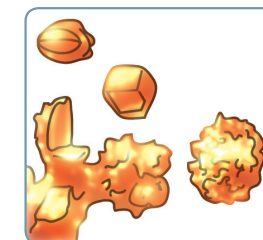
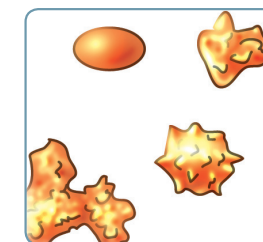
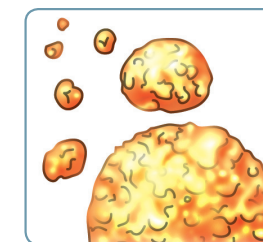
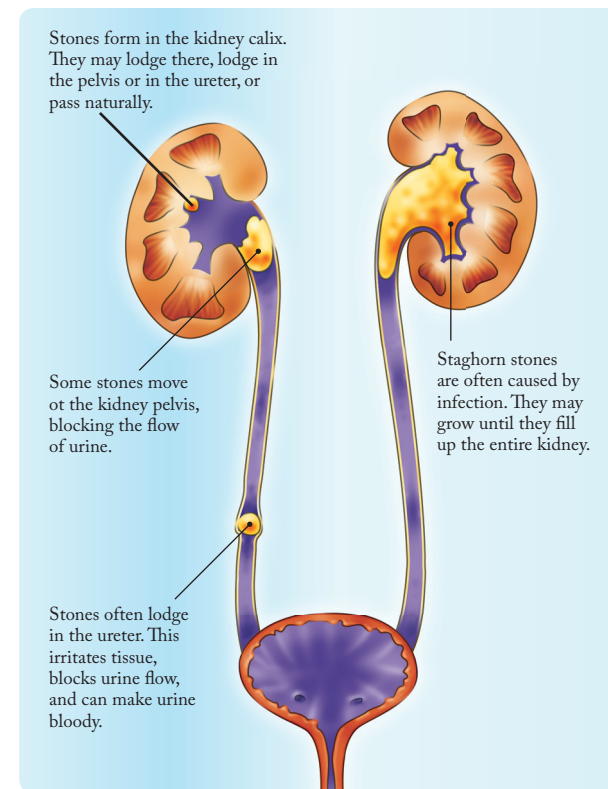
Kidney Stones *By Robert S. Hollabaugh, Jr. MD*

Kidney stones are a common and often painful problem. In fact, many medical text books describe kidney stone pain as the worst type of pain, even worse than childbirth. Mid-Southerners live in the heart of the ‘kidney stone belt’, a dubious distinction in that people in this region have a higher incidence of developing urinary stones than people

living in other regions of the country. Kidney stones can affect both men and women, and can occur at any age; although they are most common in middle aged men. An attack of pain will come on suddenly, with the pain being on the side where the stone is located. The pain usually begins in the flank area and moves to the groin area as the stone moves.

People also will often have terrible nausea and vomiting. When stone pain begins, if you can remember to urinate thru a strainer, you can often capture the stone and be certain that it has passed. Never just assume the stone is gone because the pain has stopped. If there is any question, make sure to follow up with your doctor, because it can be dangerous to leave a stone blocking off the kidney.

STONES



Kidney stones form when the concentration of calcium salts and various other chemicals in the urine gets too high. Crystals precipitate in the urine and then aggregate to form stones. While usually a slow process taking months or even years, stones can sometimes form in just a few weeks. Urinary stones become symptomatic when they cause bleeding or obstruction to the flow of urine. Small stones in the kidney are frequently asymptomatic. However, when the stones significantly increase in size or pass out of the kidney into the tube (ureter) carrying urine to the bladder, the stone may block the flow of urine causing distension of the kidney and pain. Stones may also cause irritation of the lining of the urinary tract resulting in the frequent urge to urinate as well as burning with urination. Many small stones will spontaneously pass. However, as the size of the stone increases, the likelihood of stone passage decreases. Determining the likelihood of passage requires knowing the exact size and specific location of the stone. X-rays, CT scans, and ultrasounds are commonly used to get this important information.

Diagnosis

The suspicion of a stone is usually raised by the severe pain and symptoms that a patient is having. This suspicion can be confirmed by a variety of tests. Urinalysis can detect if there is any blood in the urine, as stones in the kidney system will usually scratch the lining causing some blood in the urine. While not definite, urinalysis helps to confirm the diagnosis. CT Scan has become the gold standard in the evaluation of kidney stone disease. Most urologists schedule CT scans through a hospital facility, but the Conrad Pearson Clinic has its own CT scanner right in the office. This allows for immediate evaluation for suffering patients who suspect kidney stones. Other tests may include IVP (intravenous pyelogram). For this test, contrast dye is given intravenously which circulates thru the kidney system. Plain x-rays are taken sequentially, which give a roadmap of the urinary drainage system. Such information can help decide the size, location, and blockage associated with stones or other kidney abnormalities.

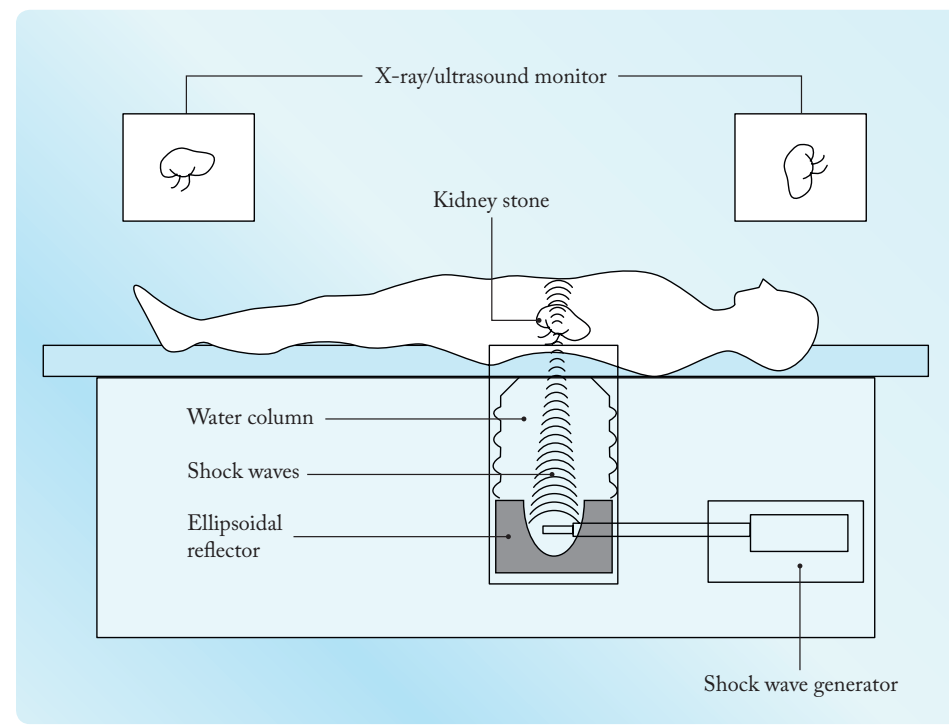
Risks

Certain diseases may be associated with stone formation, although many times stones form in otherwise healthy individuals. Gout, which usually causes a painful joint, may also be associated with stone formation. Parathyroid Gland disease can cause high blood levels of calcium which can lead to stones. Polycystic kidney disease, a genetic kidney disease, can have kidney stones. Chronic diarrhea or intestinal malabsorption syndromes can lead to stones, as can major weight loss. While there is some controversy regarding pregnancy, many feel that the metabolic changes of pregnancy may favor stone formation in patients predisposed to stones. Chronic urinary tract infections may be caused by, or may lead to, stone formation.

Treatment Options

Once a stone has been diagnosed, the urologist and patient have several options for addressing the problem. Factors that determine which method of treatment is best for a given situation include stone size, stone location, and the presence of any infection or anatomical abnormalities of the urinary tract.

LITHOTRIPSY



Trial of Passage: Patients that have small stones (usually less than 5 mm) whose symptoms are well controlled with oral pain medications are frequently treated with a period of observation to allow the stone to pass. Larger stones or stones accompanied by severe symptoms usually require intervention. Sometimes medications, like Flomax, can be used temporarily to help dilate the system so stones may pass more easily.

Lithotripsy: The first choice of treatment for most stones in the kidney is shock wave lithotripsy. This treatment utilizes a special machine (lithotripter) to generate a shock wave that has its energy focused on the stone. The shock waves pass easily thru the body and fragment the stone. The small pieces of dust that result are then much more easily passed in the upcoming days. Short acting anesthesia makes this minimally invasive treatment virtually painless. The Conrad Pearson Clinic has one of the latest generation lithotripters and the entire process usually takes less than an hour. Lithotripsy is the most common form of therapy, but some stones are not good candidates for lithotripsy. In these cases, the stone may be more appropriately treated by extraction.

Ureteroscopic Stone Extraction: Stone extraction involves using a delicate scope to look into the urinary system. With the patient under anesthesia, a scope is guided into the opening of the urethra and gently up thru the urinary tract. When the stone is seen, a fine basket is used to grasp it and extract it. If needed, a high tech laser can be used to break it into smaller pieces. Scope extraction is generally recommended when the stones are small and relatively low in the urinary tract. This procedure is performed as an outpatient procedure under anesthesia.

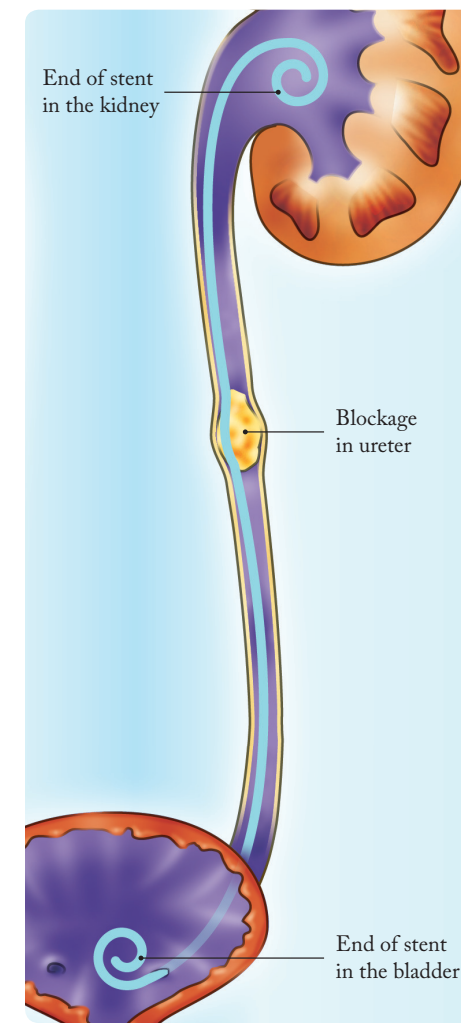
Percutaneous Stone Extraction (PERC): In cases where the stone is particularly large (over 2 cm) or is unsuccessfully managed by other treatments, percutaneous stone extraction may be recommended. This is done in the hospital and usually requires a 1-2 day hospital stay. In the operating room, a needle is placed thru the skin of the back into the kidney system. Instruments are then placed into the kidney using the wire as a guide. The stone is broken up and extracted thru the portal in the skin. A drainage tube is usually left in place for 24-48 hours, which

is removed before going home. Such PERC removals are rarely needed as most stones will respond to either lithotripsy or ureteroscopy.

Open Stone Surgery: In a very rare circumstance, an open surgical exploration is needed. Sometimes this is warranted if other problems exist with the kidney that need to be corrected in addition to the stone. An incision is made in the flank about 12 inches in length. Usually patients are in the hospital for 3-4 days, and have restricted activity in recovery of 4-6 weeks.

Stents

Sometimes in the course of managing a stone, the doctor will decide that a stent is necessary. The stent is a plastic tube that is inserted inside the urinary tract to relieve blockage. The stent spans the ureter from the kidney to the bladder. It is roughly the diameter of spaghetti and is about 12 inches in length.



It is flexible and hollow like a straw. Many different circumstances may require a stent. In some cases a stent is put in as a first step in treating the stone. When in place, the stent can gradually dilate the ureter and make more room for the stone to pass or for scope to be used later. This dilation process usually takes 7 days. After the stent has been in place, stone manipulation is much more reliable and effective. In other situations, the natural anatomy will not allow the ureteroscope to reach the stone. To force the scope up a ureter that is too small is dangerous, and can permanently damage the ureter. In these cases, the urologist will place a stent and come back a week later to more safely get the stone. If there is infection in the urinary system, it is dangerous to manipulate stones; therefore, when infection is present, a stent is placed to relieve the blockage and antibiotics are given for a week before further attempts are made at removing the stone. Finally, in many cases the ureter has become so irritated by the stone, that even though the stone is extracted, the ureter needs a stent for 4-7 days to make sure it heals properly. If the ureter is severely irritated, it will swell shut in the hours after the stone is removed and hurt just as bad as a stone. The stent will minimize these problems.

When in place, the stent itself can irritate the kidney and bladder. Because the stent is plastic, it can rub the lining of the bladder and can cause blood in the urine. The amount of blood, while visible, is usually only a minor amount. Remember, a single drop of blood will turn the entire toilet bowl red. The stent can also cause spasms of the bladder and a constant urge to urinate. Usually, the doctor will give medications that can be taken to control spasms if needed. Once the stent is removed, everything will be back to normal in 24-48 hours.

Special Circumstances

Stones and Sepsis: If a stone is infected and the patient is having fevers, special precautions must be taken to avoid sepsis (overwhelming, life-threatening spread of the infection). Infection can develop at any time while managing a stone. Because infection can easily be aggravated in the urinary tract, manipulation of an infected stone is not recommended. To manage this, patients are usually hospitalized and either a stent is

placed, or a nephrostomy tube is placed thru the skin of the back directly into the kidney to let the infection out. At a later date, once the infection is resolved, the stone can be treated.

Stones and Pregnancy: During pregnancy, because of the developing fetus, x-rays are avoided. This makes diagnosing and managing a kidney stone difficult. In most cases, conservative recommendations allow the stone to have a chance to pass. It is safe to take pain medication and antibiotics during pregnancy. In cases where the pain cannot be controlled or where infection complicates matters, a stent or a nephrostomy tube may be needed. These options usually will control the situation until after delivery. Once the baby is delivered and the uterus returns to a near normal size, lithotripsy or ureteroscopic extraction can be used to manage the stone. Stone manipulation during pregnancy is not recommended.

Prevention of Stones

While quick management of a painful stone is everyone's first concern, it is not the end of the story. As the old saying goes, "An ounce of prevention is worth a pound of cure." A critical element involves trying to prevent future stones, as prevention of stone formation is preferable to treatment of symptomatic stones. There are a variety of medical conditions which can contribute to stone formation. Certain calcium metabolic disorders, like hyperparathyroidism, can lead to stones. Digestive disorders like diarrhea, if chronic, can lead to stones. Metabolism changes, as seen with major weight loss, can also cause stones to form. The most common factor, however, is dehydration. Anything that leads to dehydration can lead to stones. Thus, the most common recommendation for stone prevention is to "drink more water." Contrary to popular belief, eating too much calcium or dairy products is not usually the cause of urinary stones. However, if you regularly have stones and are taking calcium supplements, calcium-vitamins, or TUMS, you should avoid those products. These issues related to stone formation, and others, can be identified through a variety of blood and urine tests. In certain cases, medications may significantly decrease the risk of new stone formation. Above all, a complete evaluation is critical in the long-term care plan for kidney stone patients.