



OVERVIEW OF KIDNEY STONES

What are facts that you need to know about Kidney Stones?

Kidney stones are a common problem worldwide with an incidence of 8 to 15%.

Stones most frequently occur in men and women aged 20 to 40 years, although stones are seen in all age groups.

Among patients who experienced one episode of kidney stones, the disease usually recurs in more than 50% of patients within 10 years.

Kidney stones are associated with chronic kidney disease, bone disease, diabetes mellitus and the metabolic syndrome.

How are kidney stones formed ?

Kidney stones develop when mineral crystals precipitate out from the urine and aggregate within the kidney.

What happens to kidney stones ?

Kidney stones usually leave the body by passing with the urine stream. Many small stones (usually around 4 to 5 mm size) are formed and passed without causing any symptoms. If stones grow to sufficient size they can obstruct the ureter. Kidney stones >5 mm in diameter are at higher risk of getting stuck in the ureter.

What are the types of stones?

Calcium stones: The vast majority of kidney stones are calcium stones, either calcium oxalate or calcium phosphate. High concentrations of calcium and oxalate in the urine lead to stone formation. Oxalate is a natural substance found in foods such as nuts, chocolates, fruits, and vegetables. A calcium-rich diet or high doses of vitamin D can increase the concentration of calcium in the urine.

Struvite stones: These stones are formed in response to an infection in the urinary tract. They have a tendency to grow rather quickly, often without warning or associated symptoms.

Uric acid stones: These stones form in people who have highly concentrated urine. This can be from either not drinking enough fluid or losing too much fluid. Eating a high-protein diet is a risk factor for uric acid stones. People who have gout (a type of inflammatory arthritis) are more likely to form this type of kidney stones .

What are the Causes of Kidney and Ureteral Stones?

Kidney stones form when the concentration of kidney-forming molecules in urine is too high. The most common cause of kidney stones is dehydration as often happens in the summer. High levels of uric acid and calcium in the urine also predispose to kidney stone formation. Some patients have genetic predisposition to kidney stones, other patients have diets that predispose to kidney stones.



What is the Cause of Kidney Stone Pain?

When kidney stones start to migrate through the ureter into the urinary bladder, they may cause partial or complete blockage of urine flow from the kidney. Increased pressure in the kidney cause pain. Stones themselves typically do not cause pain unless they cause blockage to urine flow. Most stones in the kidney do not cause any symptoms unless they obstruct urine flow.

How do we diagnose Kidney Stones?

In patients with symptoms suggestive of kidney stones such as flank pain, blood in urine, back pain, urinary tract infections or kidney infection, kidney ultrasound or a CT scan of the abdomen and pelvis is usually performed.

Kidney ultrasound is an excellent option when it comes to diagnosis of kidney stones. When it comes to ureteral stones kidney ultrasound may miss a diagnosis and CT provides a more reliable tool.

CT scan of the abdomen and pelvis is the most effective diagnostic tool in diagnosing kidney and ureteral stones. CT does require a small radiation exposure which is not known to cause any significant problems in most patients. However in patients with recurrent kidney stones who may require multiple CT scans over many years a significant cumulative radiation exposure can result. We try to minimize radiation exposure by using renal ultrasound

What are the options for Treatment of Kidney Stones ?

The choices for surgical management in general remain the same for all types of stone disease. Recommended options depends on stone size, stone hardness, stone location in the kidney or the ureter, and on any symptoms and signs, particularly of obstruction.

Kidney stones can be managed by
Extracorporeal shock wave lithotripsy (ESWL),
Flexible uretro-rensoscopy (URS) and laser removal also known as retrograde intrarenal surgery(RIRS)
Percutaneous nephrolithotomy (PCNL).

According to Eau guidelines 2018

Management of kidney stones-

Less than 1cm - ESWL or RIRS.
1cm to 2cm - ESWL or RIRS or PCNL(lower calyx)
More than 2cm - PCNL

Many times due to long standing obstruction, the kidney may have lost its functioning capacity and may require surgery for removal of kidney.

How does one follow Up After Surgical Treatment of Kidney Stones?

Once a patient is rendered stone free, a full evaluation to elucidate reasons for stone



formation is undertaken. The results of further testing allows your doctor to make specific recommendations to prevent recurrent kidney stone formation. Patients with kidney stones have a significant chance of forming another stone in the future. Up to 50% of men and women with their first kidney stone will develop another renal stone within 10 years. For those men and women who have had more than one stone before, the chances are even higher.

What is the dietary changes needed in order to prevent recurrence ?

There is no "one size fits all " remedy for preventing kidney stones. Everyone is different but some tips for preventing kidney stones are.

Increase your fluid intake - about 8 to 10 glasses of water (clear urinr at least once a day)

Reduce the amount of salt in your diet.

Eat plenty of fruits and vegetable.

Avoid daily intake of chocolates, nuts, spinach.

Avoid daily meat intake.

Moderate calcium intake is advisable.