



1

Causes of Kidney and Ureteral Stones

The underlined terms are listed in the glossary.

What is a stone?

A stone is a hard, solid mass that can form in the gallbladder, bladder, and kidneys. These types of stones have different causes and are treated in different ways.

This leaflet discusses kidney and ureteral stones. These develop in the kidney and either stay there or move to the ureter (**Fig. 1**).

Kidney stones form when minerals or acid salts in your urine crystalize. Most stones leave your body while you urinate. However, sometimes stones get stuck in the ureter, block the normal flow of urine, and cause symptoms. Stones can also be too big to leave the kidney. In both cases you may need treatment to remove the stone.

Facts about kidney stones

- Stones are common: about 1 in 10 people will form a stone at some point.
- You have a 5 to 10% chance of forming a stone during your life.
- Men form stones more often than women, with a ratio of 3 to 1. This difference is now becoming smaller, perhaps due to the changes in lifestyle and diet.
- You are most likely to form a stone between the age of 30 and 50.
- Stone patients often form stones more than once in their life.

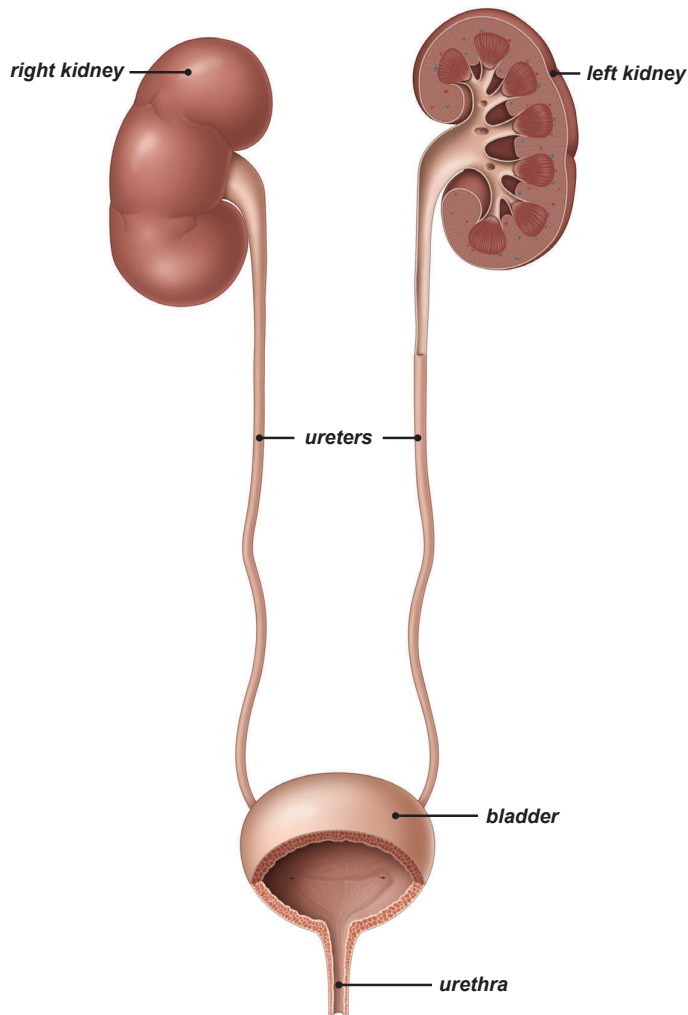


Fig. 1: The urinary tract.

What causes kidney stones?

Anyone may develop a kidney stone during his or her lifetime. Stones can form if there is an imbalance in the way your body produces urine. This may be connected to how much you drink and whether there are substances in your urine which trigger stone formation.

Stones can have other causes as well.

Some people are more likely to form stones than others. You are at higher risk if you have:

- A family history of stone disease
- A stone which contains brushite, uric acid, or urate
- Stones caused by an infection in your urinary system
- A genetic condition which makes you prone to forming stones
- A narrowing of your ureters
- An obstruction at the junction where your ureter meets your kidney

Certain urological conditions may increase the risk of stone disease:

- Medullary sponge kidney (a birth defect)
- A cyst or a condition called calyceal diverticulum
- Vesicoureteric reflux (an abnormal movement of urine into the ureters or kidneys)
- Horseshoe kidney (a birth defect)
- Swelling in one of your ureters, called ureterocele
- Nephrocalcinosis (too much calcium in the kidneys)

Some other conditions are also associated with stone disease. These include:

- Hyperparathyroidism (excessive production of the parathyroid hormone by the parathyroid glands)
- Gastrointestinal diseases (jejuno-ileal bypass, intestinal resection, Crohn's disease, mal-absorptive conditions, and urinary diversion)
- Sarcoidosis (inflammation that causes tiny lumps of cells in various organs in your body)

Additionally, stone formation is associated with a number of drugs. **Please do not stop any prescribed medication unless your doctor advises you to.**

The terms your doctor may use:

- Calculi → stones
- Renal calculi → stones in your kidney
- Ureteral calculi → stones in your ureter
- Urolithiasis → stone disease

This information was last updated in June 2012.

This leaflet is part of a series of EAU Patient Information on Kidney and Ureteral Stones. It contains general information about stone disease. If you have any specific questions about your individual medical situation you should consult your doctor or other professional healthcare provider.

This information was produced by the European Association of Urology (EAU) in collaboration with the EAU Section of Urolithiasis (EULIS), the Urolithiasis Section of the EAU Young Academic Urologists Group, and the European Association of Urology Nurses (EAUN).

The content of this leaflet is in line with the EAU Guidelines.

Contributors:

Dr. Thorsten Bach	Hamburg, Germany
Dr. Murat Binbay	Istanbul, Turkey
Ms. Nicola Dickens	London, United Kingdom
Ms. Bente Thoft Jensen	Århus, Denmark
Prof. Dr. Thomas Knoll	Sindelfingen, Germany
Mr. André Mendes	Castelo Branco, Portugal
Dr. Francesco Sanguedolce	Barcelona, Spain
Dr. Christian Türk	Vienna, Austria