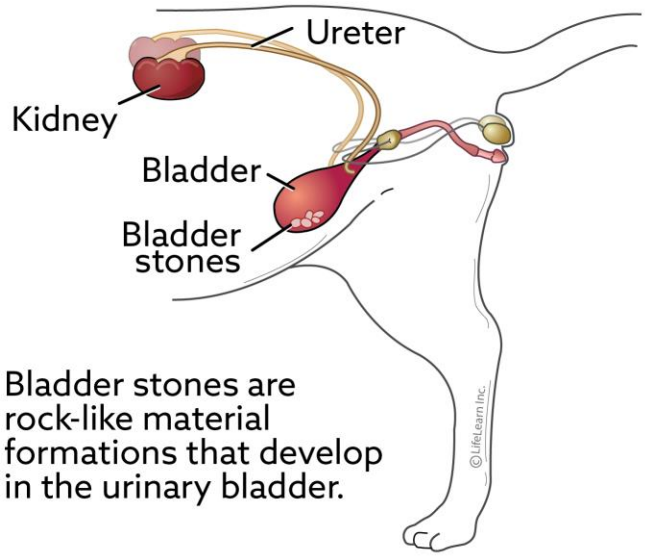
Bladder Stones in Cats

What are bladder stones?



Bladder stones (also called **uroliths** or **cystic calculi)** are rock-like formations of minerals that develop in the urinary bladder. There may be a large, single stone, or a collection of stones that range in size from sand-like grains to gravel. Many times, there is a mixture of both large and small stones present. All stones form because of disease or inflammation in the bladder.

What are the clinical signs of bladder stones?

The most common signs of bladder stones in the cat are:

- blood in the urine (called **hematuria**), and
- straining to urinate (called **dysuria**)

Bleeding happens because the stones rub against the bladder wall, irritating and damaging the tissues. Straining happens due to inflammation and swelling of the bladder walls or the **urethra** (the tube that connects the bladder to outside the body). Straining may also be caused by muscle spasms.

Veterinarians assume that the condition is painful, because people with bladder stones experience pain, and because many clients remark about how much more active their cat becomes following surgical removal of bladder stones.

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Large stones may act almost like a valve, causing an on-off or partial obstruction at the neck of the bladder (the point where the bladder attaches to the urethra). Small stones may flow with the urine into the narrow urethra, where they become lodged and cause an obstruction. This

problem occurs more frequently in male cats, because their urethra is much longer and narrower.
If an obstruction occurs, the bladder cannot be emptied fully. **This condition is an emergency, and is very painful**, especially when pressure is applied to the abdomen. If the obstruction is not relieved, the bladder may rupture. **A complete obstruction is potentially life threatening and requires immediate emergency treatment.**

How did my cat get bladder stones?

Certain minerals are naturally found in your cat's body. When these minerals are not being properly processed by the cat's urinary system, or when these mineral levels are found at higher than normal levels in the urine, they can crystallize. The sharp crystals irritate the bladder lining, causing a production of mucus. The crystals and mucus stick together, forming clusters that gradually enlarge and harden into stones.
Several factors can affect why this might happen. The urine pH (the level of acidity), the presence of certain proteins in the urine, and the water content of the urine all play a part in whether stones can form.

How quickly can bladder stones form?

Bladder stones can develop within a few weeks or may take months to form. The rate of urolith formation and growth is variable, depending on factors such as on how much crystalline material is present in the urine, diet, the pH of the urine, etc.

How are bladder stones diagnosed?

Inflammatory diseases of the bladder are common in cats, and produce the same signs as bladder stones. Therefore, we do not assume a cat has bladder stones based only on these clinical signs.
Some bladder stones can be palpated or felt with the fingers through the abdominal wall. However, failure to feel bladder stones does not rule them out because many are too small to be detected this way.
Most bladder stones are visible on **radiographs** (X-rays), or by an ultrasound exam of the bladder. These diagnostic imaging techniques should be performed on cats that show signs of abdominal pain or have repeated bouts of blood in the urine or straining.

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Some types of bladder stones are **radiolucent**, meaning they cannot be seen on a normal radiographs. This is because their mineral makeup does not reflect X-ray beams. They can be detected by an ultrasound examination, or with **contrast radiographs** a specialized technique that uses dye or contrast material to outline the stones within the bladder.

How are bladder stones treated?

There are two options for treatment. The fastest solution is to perform a **cystotomy** (surgery to open the bladder and remove the stones). This routine surgery is the most common choice for many clients, and cats usually make a speedy post-operative recovery. Cats with a complete urethral obstruction caused by large stones require immediate surgical intervention.
In some cases, a cystotomy may not be necessary **if the obstruction can be relieved by passing a catheter,** especially if it is caused by soft plugs of crystals and mucus or urethral spasms.
The second option is to attempt to dissolve the stone with a special diet. This avoids surgery and can be a good choice for some cats. However, it has three disadvantages:

- It is not successful for all types of stones. Some stones just do not respond to diet therapy.
- It is slow. It may take several weeks or a few months to dissolve a large stone, so the cat may continue to have bloody urine, straining, and repeated infections during that time. The risk of life-threatening urethral obstruction is still present while waiting for the stones to dissolve.
- Not all cats will eat the special diet. If it is not consumed exclusively, it will not work.

Can bladder stones be prevented?

Prevention is possible in many cases. There are at least four types of bladder stones in cats, each based on what they are made up of. If bladder stones are removed surgically or if small ones pass in the urine, they should be analyzed for their chemical composition. This allows your veterinarian to determine if a special diet or medication is appropriate. Regular checks of urine samples, or ultrasound examination of the bladder

are helpful in all cases to detect early return of the problem and allow adjustments in diet or treatment.