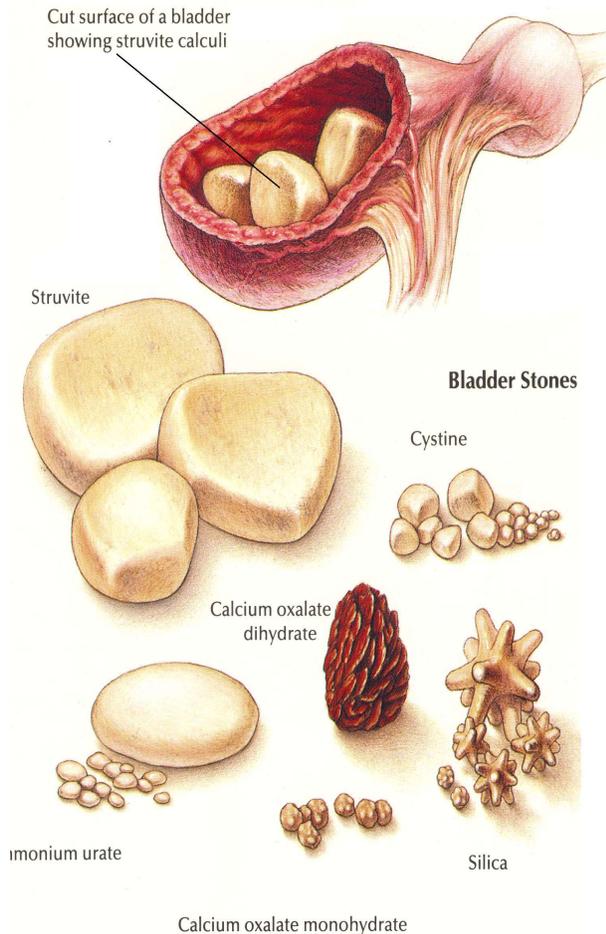


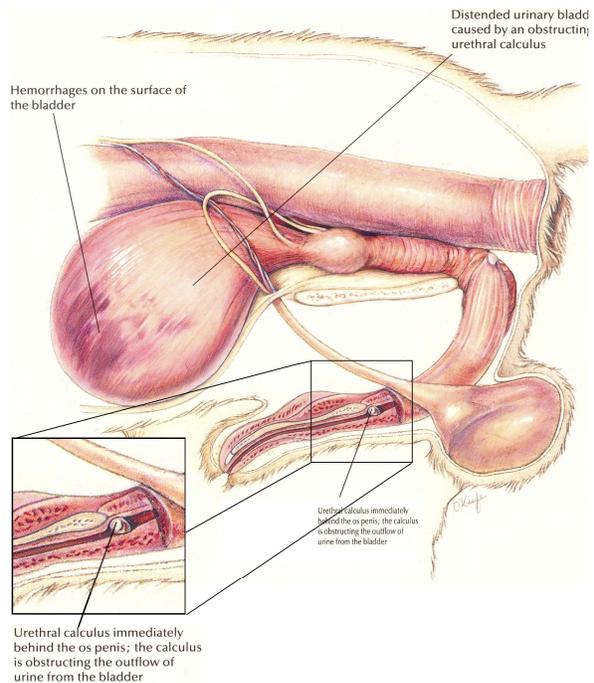
WHAT ARE BLADDER STONES?

Bladder stones, more correctly called uroliths, are rock-like collections of minerals that form in the urinary bladder. They may occur as a large, single stone or as dozens of stones the size of large grains of sand or pea gravel.



What problems do bladder stones cause?

The two most common signs of bladder stones are hematuria (blood in the urine) and dysuria (straining to urinate). Hematuria occurs because the stones irritate the bladder wall, causing bleeding from its surface. Dysuria occurs when stones obstruct the passage of urine out of the bladder. Large stones may cause a partial obstruction at the point where the urine leaves the bladder and enters the urethra; small stones may flow with the urine into the urethra and cause an obstruction in this area.



When an obstruction occurs, urine cannot pass out of the body and the abdomen becomes very painful. Your pet may cry in pain, especially if pressure is applied to the abdominal wall.

Why do they form?

One or more stone-forming mineral compounds are present in elevated amounts in the urine. This may be due to abnormalities in *diet* or due to some previous disease in the bladder, especially *infection* with bacteria. When the amount of this compound reaches a threshold level, the urine is said to be supersaturated. This means that the level of the compound is so great that it cannot all be dissolved in the urine, so it precipitates and forms tiny crystals. These crystals stick together, usually due to mucus-like material within the bladder, and stones gradually form. As time passes, the stones enlarge and increase in number.

How fast do they grow?

Growth will depend on the quantity of crystalline material present and the degree of infection present. Although it may take months for a large stone to grow, some sizable stones have been documented to form in as little as two weeks.

Sunshine Animal Hospital – Client Education Series

How are they diagnosed?

Most pets that have bladder infections do not have bladder stones. These pets will often have blood in the urine and will strain to urinate, the same symptoms as a animal with bladder stones. Therefore, we do not suspect bladder stones just based on these clinical signs.

Some bladder stones can be palpated (felt with the fingers) through the abdominal wall. However, failure to palpate them does not rule them out.

Most bladder stones are visible on radiographs (x-rays) or an ultrasound examination. These procedures are performed if stones are suspected. This includes dogs that show unusual pain when the bladder is palpated, dogs that have recurrent hematuria and dysuria, or dogs that have recurrent bacterial infections in the bladder.

Some bladder stones are not visible on radiographs. They are said to be radiolucent. This means that their mineral composition is such that they do not reflect the x-ray beam. These stones may be found with an ultrasound examination or with special radiographs that are made after placing a special dye (contrast material) in the bladder.

How are bladder stones treated?

There are two options for treatment. The fastest way is to remove them surgically. With surgery the abdomen and bladder are opened and the stones physically removed. Following two to four days of recovery, your pet is relieved of pain and dysuria. The hematuria will often persist for a few more days, and then it stops. Surgery is sometimes not an option for some patients. However, those with urethral obstruction and those with bacterial infections associated with the stones should be operated on unless there are other health conditions that prohibit surgery.

The second option is to dissolve the stone with a special diet. This avoids surgery and can be a very good choice for some animals. However, it has three disadvantages:

1. It is not successful for all types of stones. Unless some microscopic crystals or sand-sized stones, can be collected from the urine and analyzed, it is not possible to know if the stone is of the composition that is likely to be dissolved. This option should not be used in males. Their urethra is so long & narrow that even sand sized crystals can cause a life threatening urinary obstruction.
2. It is slow. It may take several few months to dissolve a large stone so your pet may continue to have hematuria and dysuria during that time.

3. Not all pets will eat the special diet. The diet is not as tasty as the foods that you may be feeding now. If it is not consumed *exclusively*, it will not work.

Can bladder stones be prevented?

The answer is a qualified "yes." There are at least four types of bladder stones, based on their chemical composition. If stones are removed surgically or if some small ones pass in the urine, they should be analyzed for their chemical composition. This will permit us to determine if a special diet will be helpful in preventing recurrence. If a bacterial infection causes stone formation, it is recommended that periodic urinalyses and urine cultures be performed to determine when antibiotics should be given.