



THE WINN FELINE FOUNDATION

For the Health and Well-Being of All Cats

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Feline Bladder Stones and Urinary Obstructions

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A urolith is stone-like object that can be found in the bladder and, less commonly, in the kidney, of cats. Some studies have shown that up to 13% of cats with lower urinary tract disease today have uroliths. They can be present without causing any symptoms in the cat, but they are very often associated with hematuria (blood in the urine), pollakiuria (increased frequency of urination) and dysuria (difficulty passing urine). Many cats with lower urinary tract disease will attempt to urinate outside of their litter box. In some cases, uroliths can cause partial or total obstruction of the urethra (the tube leading from the bladder to outside the body), so that little or no urine can pass. Obstructions are always emergency situations for the cat, causing great pain and endangering its life. Owners may see their cat visiting the litter box frequently and straining and erroneously believe the cat is constipated.

Uroliths are formed of minerals plus some organic material (usually mucus-like). Cats can have several types of uroliths, but the two most common types are struvite (magnesium ammonium phosphate or MAP) and calcium oxalate. In the past, the most common urolith type was struvite. However, in recent years, the number of calcium oxalate uroliths has increased so that now the two types occur with almost equal frequency. This is suspected to be due to changes in feline diet formulations, for the acidic diets that discourage struvite uroliths can actually encourage calcium oxalate uroliths to form in some cats.

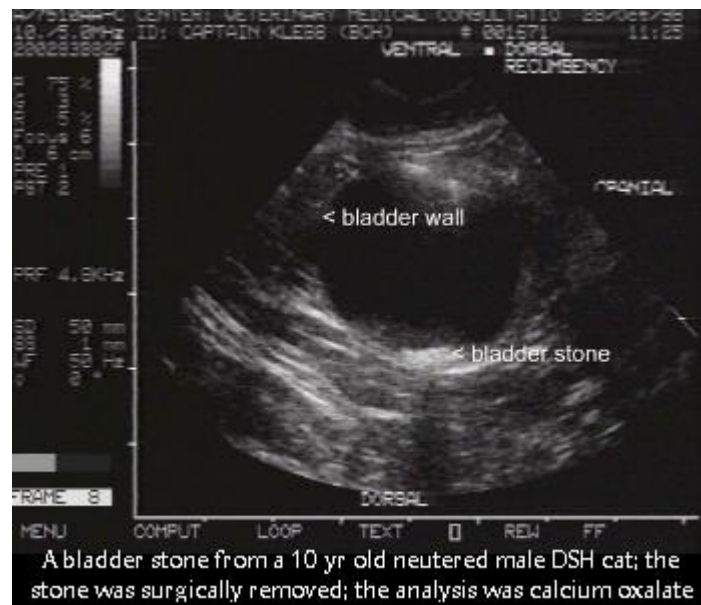
Struvite uroliths can be found in both male and female cats, but female cats seem to be at higher risk. The highest risk cat is the female aged one to two years old. The mean age for all affected cats is five years, but kittens as young as one month old and cats as old as 20 years have been found to have struvite uroliths. When struvite uroliths are present in kittens under one year old, a bacterial infection is often the underlying cause. In older cats, bacterial infections usually do not play a role.

Calcium oxalate uroliths affect males a bit more frequently than females. The risk for this type of urolith increases with age - the patient with the greatest risk is the 10 to 15 year old neutered male cat. Calcium oxalate uroliths seem to occur more frequently in the Persian, Himalayan and Burmese breeds. At least one study is currently ongoing to investigate why this is so. Bacterial infections are usually not associated with calcium oxalate uroliths. Some cats with this type of urolith have high blood calcium levels.



Calcium oxalate uroliths removed from the bladder of a cat

Management and prevention of uroliths depends on the type of urolith and the presentation of the patient. If a cat is experiencing a partial or total obstruction, emergency treatment to relieve the obstruction is required. Cats with urinary obstructions are often dehydrated, have electrolyte and acid-base imbalances, and have increased levels of waste products in their bloodstream. These problems can lead to heart and kidney dysfunction as well as bladder damage, and even death if left untreated. Typically, the urethra is catheterized to restore flow of urine and fluid therapy is started. Blood and urine tests are done to determine the patient's status and guide further treatment. After the patient is stabilized, further tests are done to ascertain if uroliths are present.



Many uroliths can be detected by x-rays. Single or multiple uroliths may be present. However, some do not show up well on x-rays or they may be too small to be seen. Feline uroliths are often flattened, much like the shape and size of a dime, although they can be pebble-like as well. In some cases, a bladder ultrasound can be the best method of detection. In other cases, or where ultrasound is not available, special x-rays may be done that involve injecting a contrast agent (such as a dye) into the bladder in order to see the stone more clearly. It is important to note that a routine urinalysis will not show any signs of uroliths in the bladder in up to 50% of cases.

It can be very difficult to tell what type of urolith is present in a patient from an x-ray or an ultrasound. It takes removal of the urolith and analysis by a laboratory to determine this for sure. Struvite uroliths can often be dissolved with a specific therapeutic diet. It can take up to four months of feeding the special diet exclusively to dissolve the urolith. During this time, the original symptoms of the problem may still occur. Calcium oxalate uroliths cannot be medically dissolved. For this reason, many owners opt for surgical removal of uroliths. This has the advantage of correct identification of the urolith type (which is important to prevent recurrences) and a quicker resolution of the problem for the cat. In some cases, small uroliths can be flushed out when the bladder is catheterized and they should be saved for analysis.

Cats that have had a urolith are always at risk for future occurrences. However, struvite and calcium oxalate uroliths can both be prevented in the future by dietary management. It is critical to note that they require different types of diets. Struvite management diets typically help to produce acidified urine, while calcium oxalate management diets produce slightly alkaline urine. There are several commercially prepared diets on the market for each type of urolith. Before acidified diets were available, cats were given an acidifier in pill or gel form in order to acidify their urine. Dietary therapy is a safer way to accomplish this, and under no circumstances should cats on an acidifying diet also be given a supplemental acidifier. It is also important to note that cats who have kidney disease are not good candidates for acidifying diets.

Antibiotics are only used if it was determined a bacterial infection was part of the problem (which is uncommon) or if the patient required catheterization to relieve an obstruction. Occasionally, cats with calcium oxalate uroliths may need other measures in addition to prescription diets (such as some prescription medications) to prevent recurrences. In general, canned diets do a better job of preventing future occurrences of uroliths because they encourage more water consumption than dry diets.

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