

A Serious Life-Threatening Obstruction for Predisposed Male Dogs

About 3 out of 4 dogs diagnosed with this increasingly common condition are males between 5 and 12. Painful and deadly, get to a vet immediately if you think your pup might be suffering from this. Here are the major symptoms to look for and which breeds are predisposed.

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STORY-AT-A-GLANCE

- Calcium oxalate (CaOx) bladder stones have increased in dogs in recent years. The stones form from calcium oxalate crystals in the urine
- The typical CaOx stone patient is a middle-aged to senior male dog, and certain breeds are at higher risk
- The danger of bladder stones is they can obstruct urination, especially in male dogs. The stones can also be painful, often require surgery to remove, and tend to recur
- Prevention strategies include increased water intake, dietary adjustments, and regular monitoring for the remainder of the dog's life

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Dogs, like cats and humans, can develop a variety of types of stones in their bladder and kidneys. Bladder stones, also called uroliths, are small rock-like structures that form from minerals in urine. They are more common than kidney stones in dogs, and there may be one large stone, or a collection of stones ranging in size from grains of sand to gravel.

One of the most common types of uroliths in dogs is made up of calcium oxalate (CaOx) crystals. Over the past 15 years, the incidence of oxalate stones in dogs has increased significantly, while cases of struvite stones, which are caused by an infection and exacerbated by an alkaline diet, have decreased.

About three-quarters of dogs diagnosed with this type of stone are males between the ages of 5 and 12. Breeds at highest risk include the bichon frise, lhasa apso, shih tzu, miniature poodle, miniature schnauzer, and Yorkshire terrier.

How Do Dogs Get Calcium Oxalate Stones?

As with humans, there is a strong genetic component to the formation of oxalate bladder stones in dogs. A substance called nephrocalcin in urine naturally prevents formation of the stones, but in both people and dogs who develop stones, the nephrocalcin is defective. Production of defective nephrocalcin may be inherited.

Metabolic diseases that may predispose a dog to develop stones include Cushing's disease and hypercalcemia, which is an elevated blood calcium level. A urine pH below 6 can also promote development of calcium oxalate stones.

Calcium Oxalate Stones Are Painful and Potentially Dangerous

The danger for a dog, especially a male dog with bladder stones is that they can obstruct the urinary opening, which can cause life-threatening uremic poisoning. If you notice that your dog isn't passing urine, you should bring him immediately to your veterinarian or the closest emergency animal hospital.

Your veterinarian will try to dislodge the stone by flushing it back into the bladder, which if successful will also clear the urinary opening. If the stone can't be dislodged, the doctor may need to create a new urinary opening. The urethra, a slender tube that carries urine out of the bladder during urination, is difficult to perform surgery on, so your veterinarian would prefer to flush the stone back into the bladder for removal vs. attempting to remove it from the urethra.

Calcium oxalate stones cause pain because they irritate the tender lining of a dog's bladder. This usually causes bleeding, and also increases the likelihood of chronic bladder infections.

Calcium oxalate stones can't be dissolved with a dietary change, so surgical removal is usually necessary. Unfortunately, about half of dogs who undergo surgery develop new calcium oxalate stones within three years.

Differentiating Calcium Oxalate Stones From Other Types of Bladder Stones

The only way to know definitively that a bladder stone is a calcium oxalate stone is to actually retrieve it and send it to a laboratory for analysis. Removing the stone often requires forcefully expressing it or surgically opening the bladder to remove it, neither of which is ideal for purposes of a diagnosis.

Sometimes a veterinarian can actually feel (palpate) a stone if the bladder isn't too painful and the dog is relatively relaxed. Unfortunately, some stones are too small to be palpated.

Stones are frequently diagnosed through an x-ray or ultrasound of the bladder. However, these tests only identify the presence of a stone, not the composition of it.

Your veterinarian may be able to make an educated guess about the type of stone in your dog's bladder based on imaging and urinalysis results. For example, if your pet's x-rays show one or more stones in the bladder, and the urinalysis indicates acidic urine and calcium oxalate crystals, your vet may make a reasonable diagnosis of calcium oxalate bladder stones and proceed accordingly.

Calcium Oxalate Bladder Stone Prevention Strategies

A crucially important strategy in preventing CaOx stones in predisposed dogs is a diet that promotes less acidic, more dilute urine with a low urine specific gravity (less than 1.020). This means intentionally creating less concentrated urine by adding more moisture to your dog's diet.

Insuring your dog is drinking plenty of clean, fresh water is a primary prevention strategy. You might want to consider

providing a water fountain with continuously filtered, fresh, and running water to encourage your dog to drink, along with placing bowls of fresh water in multiple locations around the house. You can also add meat broths or low-sodium bouillon or stock to the water or food to entice your pet to consume more water. Avoiding kibble (with a low moisture content of 10% to 12%) and choosing canned, raw, or fresh food diets with more moisture is also beneficial.

In some cases, medications such as potassium citrate may be needed to increase the urinary pH. Adding alkalizing fruits and veggies to the diet can also keep urine pH in a neutral range (7).

Vitamin B6 increases metabolism of glyoxylate, a precursor of oxalic acid, and may be of benefit. Check with your holistic vet about the right dose of supplemental B6 for your dog.

Dogs prone to calcium oxalate stones should not be given calcium supplements or high oxalate foods such as nuts, rhubarb, beets, green beans, and spinach. More information about the oxalate content of foods can be found [here](#).

Most conventional veterinarians recommend a lifelong commercial therapeutic diet for dogs with CaOx stones. My strong preference is an appropriate home-cooked diet, which you can create with guidance from a veterinary nutritionist at Balance IT or another similar resource.

Herbs that may benefit bladder stones include chanca piedra, alfalfa, dandelion, goldenseal, horsetail, marshmallow, plantain, Oregon grape, uva ursi, yarrow, maitake mushrooms, corn silk powder, and olive leaf.

Regular Monitoring Is Very Important for Stone-Prone Dogs

Your vet should perform routine monitoring of your dog's urine to look for any signs of bacterial infection. Bladder x-rays and urinalysis should be done one month after treatment and then every three to six months for the rest of your pet's life.

If your dog shows any urinary-related symptoms such as frequent urination, urinating in unusual locations, pain while urinating, or has blood in the urine, he should be seen by your veterinarian right away. Unfortunately, calcium oxalate stones tend to recur despite the best prevention efforts.

Calcium oxalate bladder stones can be very frustrating to manage. Not only do they often recur, but appropriate monitoring of your dog's health involves frequent veterinary visits. However, it's important to keep in mind that the risk and expense of surgery to remove a bladder stone is considerably more than the effort and cost of monitoring the condition closely.

Sources and References

[VCA Animal Hospitals](#)

[Veterinary Practice News November 29, 2010](#)

[Veterinary Partner](#)
