



# **BLADDER STONES & GRAVEL**

## **FACT SHEET 20**

This fact sheet covers conditions relating to the formation of stones or gravel in the urine in both dogs and cats, a condition sometimes referred to as urolithiasis. In cats, the problem is more frequently referred to as Feline Lower Urinary Tract Disease (FLUTD) or idiopathic Feline Lower Urinary Tract Disease (iFLUTD), although older books and leaflets may refer to the condition as Feline Urological Syndrome (FUS).

## **INTRODUCTION**

Both dogs and cats commonly suffer from urolithiasis and associated urinary tract symptoms. Gravel is a particular problem in cats, whilst stones are more commonly seen in dogs. They can cause a variety of problems, particularly recurrent bouts of cystitis, difficulty passing urine and incontinence. Occasionally, much more serious problems can arise, such as blockage of the urethra.

## **THE URINARY TRACT**

Urine is formed by the kidneys when the blood is filtered to remove waste products. Urine passes from the kidneys through two tubes called the ureters, to the bladder, where it is stored. When your dog or cat urinates, the bladder contracts and the urine passes out through a larger single tube called the urethra. Stones form in the bladder when minerals dissolved in the urine form crystals, which then amalgamate and form uroliths, small gravel-like particles or stones. These can vary quite considerably in size, ranging from minute stones that can barely be seen, to those the size of a small orange. The stones form for a variety of reasons; often there is no single cause. However, urinary tract infections, stress, high levels of certain substances in the diet, low water intake and situations where an animal is not given the opportunity to urinate at will, can all increase the chances of a problem arising. Some breeds of cats and dogs are especially prone to bladder stones. The age and sex of the animal also play a part.

## **BLADDER STONES in the DOG**

### **SIGNS & SYMPTOMS**

In most, but not in all cases, the presence of stones or gravel will cause some clinical signs, depending on the type and size of the stones and the age and sex of the dog. Cystitis is the most common symptom, caused by the stones rubbing and irritating the lining of the bladder. You may notice that your dog wants to pass small amounts of urine (sometimes containing blood) more frequently. Passing urine can be quite painful and you may see some straining or discomfort. Cystitis can be treated conventionally with antibiotics or with alternative medicines such as herbs or homeopathic remedies, normally clearing the infection quickly. However, if the problem fails to respond to treatment or becomes recurrent, then it would be wise to investigate the possibility of bladder stones.

In some cases, incontinence is the only apparent sign. Straining and the constant need to pass urine are absent and the only symptom is leakage or dribbling of urine whilst your dog is lying down.

In males, due to the fact that the urethra is narrow, it is possible for small stones to become lodged part way down, blocking the flow of urine. This is potentially a very serious situation, which can lead to rupture of the bladder or kidney damage. Prompt treatment from your vet is always necessary where an obstruction is suspected. This situation is much less likely with a bitch, as the urethra is larger in diameter. You may, however, see small stones passed intermittently.

## **TYPES OF STONES**

Bladder stones are made up of a variety of different components and are grouped accordingly. The most common type of stone is composed of struvite, a mixture of magnesium, ammonium and phosphate. Struvite accounts for about 50% of bladder stones and is the most common type of stone seen in bitches. Less common types of bladder stone include oxalate (30% of all stones) urate (8% of all stones) which is found in Dalmatians, and cystine (1% of all stones). All three occur predominantly in males. Even more rare are stones composed of Silica, Calcium phosphate and other minerals. Some dogs form mixed stones where more than one individual type are present in the bladder.

## **DIAGNOSIS**

The symptoms exhibited by your dog may lead your vet to suspect bladder stones and to confirm his suspicions, he may decide to carry out an ultrasound scan or X-rays. Most bladder stones will show up on X-rays if of sufficient size to be seen. Unfortunately, it is often difficult to spot very small stones or gravel. A urine sample can also be very helpful, as the pH (acidity/alkalinity) of the urine is a valuable guide. Struvite stones normally form in alkaline urine, whereas cystine and urate normally form in acid urine. Oxalate stones can form in either. Some dogs can have a mixture of different stones.

## **TREATMENT AND PREVENTION**

Depending on the type and number of stones, there are several different ways of dealing with the problem. In the past, stones were always removed surgically and although this is still the usual course of action for oxalate and cystine stones, it is possible to dissolve away other types using special diets. Your vet will be able to advise you on the best course of action and supply any specialised diet. On average, it will take about eight weeks to dissolve stones, during which time you must keep strictly to the diet. In general, increasing the fluid intake of your dog will help in the management of all types of stone.

## **DIETARY HELP**

Diet is extremely important in preventing recurrence once the stones have gone. What you will need to do will vary with the type of stones.

For **struvite** the diet needs to be:

- Low in magnesium and phosphorus

- Have a reduced level of protein. Excess protein is broken down into ammonia, another constituent of struvite

For **oxalate** the diet should be:

- Moderately restricted in calcium, protein and sodium

For **urate** the diet should be:

- Restricted in protein

For **cystine**

- An increase in fluid intake is recommended

**Denes Senior With Chicken, Lamb & Rice, Denes Senior With Turkey, Rabbit & Rice and Denes Adult Light** recipes have reduced protein levels and lower levels of both phosphorus and magnesium compared to most of our other recipes. However, before feeding any of our recipes, you should discuss the suitability of our foods with your vet, as they are not prescription diets.

### **FLUTD, iFLUTD IN CATS**

FLUTD is, unfortunately, a common problem. It occurs in both sexes, but is of particular concern in males because the urethra is very narrow, leading to silting-up and possible blockage by gravel, with serious consequences. Although many older articles and books will detail this condition as FUS, the condition has been renamed FLUTD, feline lower urinary tract disease, in recognition of the greater understanding we now have of this complex problem. The term FLUTD now represents a broader spectrum of symptoms relating to the lower urinary tract and encompasses a variety of potential underlying causes, of which the presence of stones or gravel is just one.

### **SIGNS AND SYMPTOMS**

Despite the change in name, the symptoms of this problem remain the same. These include:

- Straining to pass small amounts of urine
- The presence of blood and mucus in the urine
- Inappropriate urination
- Frequent cleaning or licking after urination
- An increase in frequency of urination (more visits to the litter tray or outside)
- Possible blockage of the urethra in male cats (which constitutes a real emergency)

### **CAUSES & RISK FACTORS**

Underlying these symptoms are a number of important causes:

- **The formation of crystals, gravel or stones in the bladder**

The stones or gravel which form in cats are of 4 main types:

**Struvite**, which is composed of magnesium, ammonium and phosphate. This type is common in domestic cats, especially younger females.

**Calcium oxalate**, which is more common in older cats, in males and in the Burmese and Persian breeds.

**Ammonium urate**. This type can form because of problems with the kidneys.

**Calcium phosphate**. This type is very rare in cats.

- The formation of **plugs** in the urethra (usually composed of mucus, protein and crystals). This can lead to blockage of the urethra, a major problem in male cats where the urethra is both long and narrow and can become completely blocked so that urine cannot be passed. As urine collects in the bladder, the back pressure that results can lead to kidney damage
- **Infections** (both viral and bacterial)
- **Trauma** to the bladder and pelvic region
- **Idiopathic cystitis**, a term applied when there is no obvious cause, other reasons having been ruled out. Surprisingly, this is the most common cause of FLUTD and thought to be due to **stress**
- **Behavioural problems**, including **stress**, are an important contributory factor in a large number of cases
- **Diet**. Mineral imbalances (especially magnesium) and urine pH can be influencing factors
- **Tumours or growths** in the urinary tract. Fortunately these problems are rare

Recent studies into FLUTD have identified some of the major risk factors:

- Cats between 2 and 6 years old are at greatest risk
- Males have the greater risk of urethral obstruction
- **Neutered cats** are more at risk due to greater likelihood of obesity
- Feeding **dry food** increases the risk, possibly due to less water intake
- **Frequent feeding** as opposed to feeding at distinct times can be a factor as this tends to predispose to alkaline urine
- **Obesity**. Overweight cats with a lazy lifestyle are at greater risk
- Reduced **water intake** increases the risk
- **Retention of urine**. Cats which hold their urine for long periods are at greater risk
- **Cats that live** indoors are at greater risk than those that have regular access to the outside
- **Anatomical problems** can also cause problems

## **TREATING FLUTD**

FLUTD was once thought to be mainly due to the development of dietary induced crystals, stones and gravel within the bladder. The majority of these were believed to be composed of magnesium, ammonium and phosphate, more commonly known as struvite. This type of material forms in urine with a high pH, i.e. urine that is alkaline. Since the acidification of diets in order to prevent struvite formation, there has been an increase in the incidence of calcium oxalate crystals and stones, which form in acid or low pH urine. Since magnesium was also implicated, there has been a general trend to reduce the amount of magnesium in cat foods.

Although this situation seems complicated, diet still forms one of the main conventional approaches to treatment. Several specialised veterinary diets are currently available, that will help limit the development of both struvite and oxalate crystals and control the symptoms of urolithiasis and idiopathic cystitis. This is achieved by carefully controlling the pH of the urine and individual food ingredients. Other conventional approaches include the use of antibiotics, urinary acidifiers, urinary antiseptics and the increasing use of pheromone based calming diffusers, which are now frequently used where stress is a factor.

## **HOW DENES CAN HELP FLUTD**

Though some Denes cat recipes may be low in magnesium, you will need to check with your vet as to the suitability of feeding any of our recipes for each individual case as they are not prescription diets.

You should always make sure that your cat has access to fresh, clean water and has the use of a clean litter tray. The opportunity to exercise freely (also helping to avoid obesity) and to urinate outdoors at will are equally as important.

## **USING HERBAL REMEDIES IN CATS & DOGS TO HELP BLADDER PROBLEMS**

Herbal remedies can be used not only to help prevent stones and gravel from forming, but they can also help deal with any associated symptoms such as cystitis. They can be safely used alongside any specialised diet and any other conventional medicines your vet may prescribe.

## **HOW HERBS CAN HELP**

Some herbs have a diuretic effect, increasing the flow of urine through the bladder, thereby flushing out excess minerals. Others have an antiseptic action, helping to kill bacteria, whilst those with a demulcent effect can soothe the lining of the urinary tract, relieve inflammation and assist healing. There are also specific herbs that can help prevent the formation of stones or gravel.

## **RECOMMENDED DENES PRODUCTS**

- **Denes Bladder Support (Dogs)**
- **Denes Bladder Support (Cats)**

Both these products have been formulated carefully, using medicinal herbal tinctures that have specific actions on the urinary tract:

**BUCHU** (*Agathosma betulina*)

Helps with urinary infections, acting as a urinary antiseptic, and is both soothing and healing to the lining of the urinary tract

**BEARBERRY** (*Arctostaphylos uva ursi*)

Soothes, tones and strengthens the lining of the urinary tract, also acting as a urinary antiseptic. Helps prevent gravel and stones forming

**COUCHGRASS** (*Agropyron repens*)

Reduces inflammation and irritation of the urinary tract, also helps prevent stones and gravel forming

**GRAVEL ROOT** (*Eupatorium purpureum*)

Helps prevent urinary stones and gravel forming

**HORSETAIL** (*Equisetum arvense*)

Tones the bladder and can help ease incontinence

**HYDRANGEA** (*Hydrangea aborescens*)

Helps prevent gravel and stones forming, especially where associated with cystitis, helps with prostate problems

Formulated in a specific combination to help support the health of the bladder and lower urinary tract, administration is easy as the tinctures are easily added to food. The cat version has the advantage of added vegetable glycerine to improve the palatability.

**Other Denes products that may help**

- **Denes Greenleaf Tablets** can also help. The main active constituent of this herbal medicine is Stinging Nettle (*Urtica dioica*), which has a gentle diuretic effect to help flush away excess minerals
- **Denes Milk Thistle+ Powder** is also recommended for severe cases. This product is based on Dandelion (*Taraxacum officinale*) which is a good diuretic that will help flush away waste products and Milk Thistle (*Silybum marianum/Carduus marianus*) which provides general support for the liver and body
- **Denes Tranquil+ Powder** can prove useful where stress is a factor. The main constituents include Valerian (*Valeriana officinalis*) which is well known for its relaxing and sedative properties, Skullcap (*Scutellaria laterifolia*) a herb which also reduces anxiety levels and has a general calming effect and Vervain (*Verbena officinalis*) another calming herb that works well in combination with other calming herbs, such as Valerian and Skullcap

Alternatively for easing stress you can consider using some of the flower essences from our range, particularly:

- **Timid Essence**
- **Separation Essence**

**Homeopathic help**

For the short term relief of cystitis:

- **Denes Cantharis 30c** drops given every 2 -3 hours until the symptoms abate.

Other useful Denes fact sheets to read

- Tranquil+ Powder
- Flower Essences
- Homeopathy
- Nettles

If you have any queries concerning your pet's health or feeding problems, you can contact us for free pet care advice by:

- Visiting our website [www.denes.com](http://www.denes.com)
- Emailing us at [info@denes.com](mailto:info@denes.com)
- Calling us on **01273 325364** Mon-Fri, 9am – 12Noon
- Writing to us at:  
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