

# UROLITHIASIS, AKA BLADDER STONES IN THE BICHON FRISE

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**B**ladder stones can affect many breeds of dogs, with the Bichon Frise being one of the breeds most often affected. The technical name for bladder stones is uroliths. The purpose of this article is to try to examine the factors causing this disorder and help to prevent them from affecting our dogs. Stones can also develop in the kidneys and the upper areas of the urinary tract system. This is much less commonplace for stones in the dog.

Uroliths develop over time with the accumulation of crystals in the bladder that develop into stones. Genetics, breed, environment, diet, sex, and other factors can lead to their development. The severity of signs can vary from a bladder infection to a life-threatening disorder with obstruction of the urethra.

There are three major forms of bladder stones and two of these are found most often in Bichon Frise. The three types are:

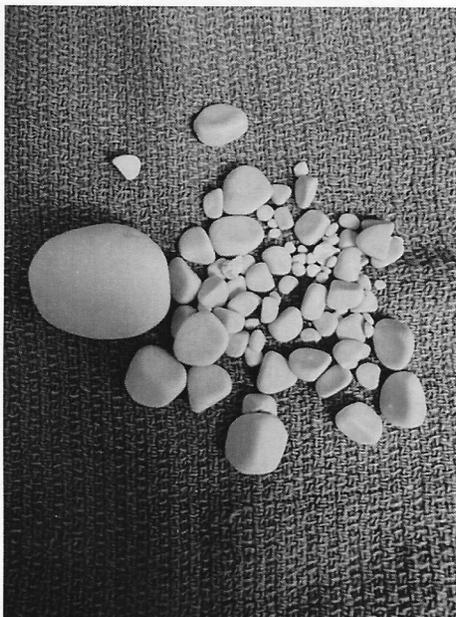
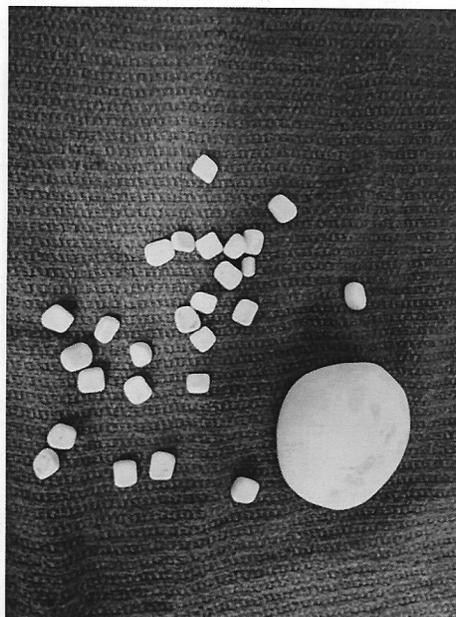
**A, OXALATE:** Also known as calcium oxalate dihydrate or calcium oxalate monohydrate. These stones are made up of calcium oxalate crystals. Incidence is most common in male dogs over the age of seven that are castrated. With Bichons these stones can start at a much younger age. Due to the smaller size of these stone, they can cause urethral obstruction.

**B, STRUVITE:** Also known as triple phosphate or magnesium ammonium phosphate stones. These stones are made up of a combination of magnesium, ammonium and phosphate crystals. These are the most common type of bladder stones and can grow to be very

large in size. These are more common in female dogs than males.

Below are several pictures of oxalate and struvite stones removed surgically from dogs:

**C. URATE** - Also known as uric acid stones or ammonium urate stones. These stones are made up of uric acid crystals and their salts. These are the least common form of bladder stones and are extremely rare in Bichon Frise.



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## Urolithiasis, cont'd

Dalmatians are the primary breed that develop uric acid stones.

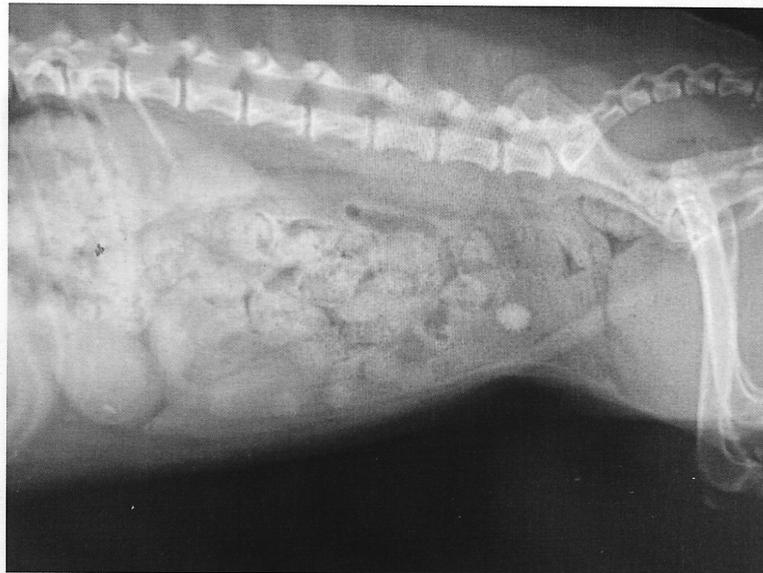
The clinical signs associated with bladder stones can include straining to urinate, blood in the urine, increased frequency of urination, accidents in the house and severe cases infections that cause kidney and system-wide illness. Sometimes a dog with bladder stones will pass one and they will be visibly observed. **IT IS VERY IMPORTANT**, especially in the male dog if they are straining and not producing any urine to get medical attention on an emergency basis. The male urethra is very long compared to a female, thus there is a far greater chance of a stone becoming lodged. The two most common areas for obstruction occur near the prostate gland and at the os penis (this is the bone in the penis that helps during ejaculation). At the veterinary office the physical examination will often find a dog with discomfort or even severe abdominal pain on palpation of the bladder region. An obstructed bladder can often be felt during the exam. A urinary catheter will be passed to collect a urine sample and to rule out an obstruction. This will be determined when the veterinarian is unable to pass the catheter into the bladder. The complete physical examination is essential to aid in diagnosis of bladder stones and to rule out other forms of urinary tract disease. It is also imperative to learn about the dog's diet during this time.

The methods of diagnosis of bladder stones include:

- **Urinalysis:** On a dog's urinalysis the various forms of crystals can be seen, either via microscopic examination or by modern veterinary urine analyzers.
- **Radiographs:** Abdominal radiographs are the number one way to determine if a dog has bladder stones.

The veterinary professional will be able to see the location of stones to determine if an obstruction has occurred and the best method to treat them.

- **Ultrasound:** Another valuable way to determine diagnosis of uroliths. Examination of the kidneys can also be accomplished to make sure that there is no damage to the kidneys. Below are a few radiographs of dogs with bladder stones:



Once the diagnosis is made the next step is to determine the best method for removing the stones. The choice of method of removal can vary, depending

on the size, type, quantity and location of stones. The following are ways of removing bladder stones:

- **Surgery aka Cystotomy:** a surgical procedure where an incision is made into the bladder to remove the stones. This is the most common procedure used and the best for removal of large stones.
- **Dietary Dissolution:** Hills Canine S/D is a dog food that helps to dissolve struvite stones. This occurs by control-

ling the pH of the urine and has low levels of magnesium and phosphorus in its formula. This diet can be fed for up to six months. The stones dissolve over time, but great care must be taken to make sure the dog does not have bladder obstruction during the time the dog is on the diet. Regular visits to the vet will be necessary to monitor the dissolution in the form of bladder radiographs.

- **Perineal urethrostomy:** This is a surgical procedure that is used to

relieve urethral obstruction in the male dog. A small incision will be made to create a new place for the dog to perma-

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## Urolithiasis, cont'd

nently urinate. In the male dog this is into the perineum which is located between the scrotum and the rectum. While cutting into the penis the urethral opening will be enlarged and sutured open to allow the dog to urinate more easily and allow for small stones to escape the urinary tract system.

- Cystoscope: Specially trained veterinarians may use an endoscope to help in diagnosis of bladder stones and their removal.

- Laser and Shockwave Lithotripsy: these methods of treatment have been used in humans for many years, especially to remove kidney stones. These procedures basically "blast" the stones using lasers or shockwaves to break the stones into small pieces and when an animal urinates the remnants will be removed as the dogs urinates. This takes special training, is limited in the number of places performing, can be expensive, but may help to avoid an animal having to undergo surgery.

Other important things that veterinarians may do during the removal of bladder stones may include:

A. Performing a urinalysis from the urine collected from the bladder.

B. Sending off a urine sample for a culture and sensitivity. This is done to determine if there is a bacterial infection involved and help to determine the best antibiotics to use.

C. Analyzing the bladder stones and determining the type of stone that they are. The University of Minnesota College of Veterinary Medicine Urolith Center offers free analysis of bladder stones. These reports are critical to determine plans to prevent the recurrence of the stones.

The long-term goal after removal of bladder stones is the prevention of their return. Each type of stone has a different

routine that helps with this endeavor. Dietary changes are the single most effective way to prevent their return. Below are listed steps for each type of stone that may be helpful:

- Struvite:
  - Dietary Change: switch to Hills s/d for six months and then turn to c/d, Purina UR, Royal Canin SO or Blue Buffalo WU.
  - Treat all infections with appropriate antibiotics.
  - Prompt water consumption to increase urinary output.
  - Repeat radiographs, and urinary tests as directed by a veterinarian.
- Oxalate:
  - Feed diets such as Hill's u/d., w/d or c/d. Royal Canin S/O, Purina st/ox, and Blue Buffalo WU.
  - Avoid supplements with Vitamin C and D.
  - Make sure dog is drinking lots of water.
  - Treat all infections until resolved.
  - Continue monitoring with radiographs and urinary tests.
  - If oxalate crystals persist in the urine, veterinarians may prescribe the use of various forms of thiazides.
- Urate:
  - Switch diet to Hills u/d, Royal Canin Urinary UC Low Purine or Royal Canin Vegetarian Formula.
  - Treat with the drug allopurinol, which helps prevent urate conversion.
  - Test all non-Dalmatians for liver disease and portal systemic shunts.
  - Prompt water consumption.
  - Repeat urinary tests and radiographs as direct by veterinarians.

Despite the best efforts to prevent bladder stones, reoccurrence does happen. All efforts and continual monitoring are nec-

essary to keep our dogs safe and free from stones coming back.

What does the future hold for the prevention of bladder stones in our Bichon Frise? The University of Minnesota's College of Veterinary Medicine Urolith Center and Canine Genetics Programs are the leading research centers studying uroliths. Dr. Eva Furrow has been conducting research into calcium oxalate stones and is trying to develop tests to determine the heritability of these stones in the Bichon Frise. The Bichon Frise Club of America, along with its Health Committee and Bichon Frise fans have helped raise money to aid in these research projects. At the last national specialty, DNA samples were collected to be sent to the University of Minnesota. Hopefully with all these steps we may have a future test to help breeders eliminate any heritable aspect of the bladder stone puzzle.

For more information please check out the University of Minnesota's College of Veterinary Medicine Urolith Center at <https://www.urolithcenter.com> and the Bichon Frise Club of America's Health Committee Website.

