

URINARY STONE DISEASE IN DALMATIANS



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Introduction

Dalmatians and other dog breeds can form stones (uroliths) in the urinary tract. Some crystal- or stone-forming dogs, Dalmatians included, live out their lives happily without ever showing symptoms or forming urate stones at all. Most stone-forming dogs can be successfully treated. Prevention and early diagnosis and treatment are important to avoid the need for surgery. Of the Dalmatians ultimately progressing to stone forming, the most common breed-specific type of stones are urates. The Minnesota Urolith Center at the School of Veterinary Medicine of the University of Minnesota is a major resource for information. Their recommendations for urate urolithiasis can be found here:

https://vetmed.umn.edu/sites/vetmed.umn.edu/files/canine_urate_uroliths.pdf

Minimizing high purine food ingredients is an important aspect of prevention. Prescription-only dog food formulated to be anti-urate/low purine is available through veterinarians. After being weaned from nursing and puppy diets, adult Dalmatians can be fed from a choice of non-prescription lower protein dog foods such as vegetarian and poultry and grain formulas. Diets are always changing, and often the breeder is a good resource for currently available diets that do not promote urinary stone formation. Many Dalmatians go their entire lives without the onset of active stone disease. In other Dalmatians, urate stones already formed can be successfully dissolved without surgical removal by Allopurinol, an anti-urate drug, plus anti-urate/low purine food formulations.

EMERGENCY!

When your Dalmatian Cannot Pass Urine (Obstruction of Urinary Stream)

- Rush dog to your veterinarian or emergency clinic! Obstruction of the urinary pathway can quickly reach life-threatening status within 24 to 48 hours as urine relentlessly backs up into the dog's body system instead of being expelled out of it.
- Dammed-up urine should be immediately removed from the bladder either by cystocentesis or by catheterization. Urine may be so drained several times while diagnosis and treatment are being evaluated. Tapping off urine "buys time."
- Have the type of urinary stone or crystal assayed at once. Abnormal urinary crystals are identifiable under an office microscope. Urate crystals thrive in abnormally acidic urine. Struvite ("infection") crystals thrive in abnormally alkaline urine.
- Have ultrasound confirm size, location of stones. Important – Remind your veterinarian that urate stones in Dalmatians may not be seen by normal radiographs. Instead, ultrasound should be the visualization of choice.
- Non-surgical clearing of the obstruction can be often accomplished by urohydropropulsion whereby, under anesthesia, the obstructing stones are flushed back up into the bladder or voiding urohydropropulsion which instead of backflushing, expels the obstructing stones out of the dog's urinary pathway. If other stones continue to move down and re-obstruct, then surgical removal (cystotomy, urethrotomy) may be unavoidable to restore more than temporary urinary flow.
- Important! "UrethroStomy" (with an "S") is not simple stone-removal surgery! It is a surgically created, irreversible, urinary opening and should be considered a last resort after all other modern anti-stone procedures have failed. If unavoidable, it should be performed only by a member of the American College of Veterinary Surgeons (who must be "Board certified" for membership) who is experienced in performing urethroStomies.
- Your veterinarian may start your dog on antibiotics for urinary infection or to prevent the onset of one.
- Rush specimens (stones passed, catheterized or removed surgically - or sediment centrifuging out during urinalysis) - to one of the North American urinary stone centers who will confirm the analysis.

Why Do Some Dalmatians Form Urinary Stones?

Instead of processing protein to uric acid and then to allantoin like most other dogs, all Dalmatians for many years lacked the ability for the final step in the process, producing higher levels of uric acid to be excreted in the urine. (A breeding program introducing the gene for lower uric acid has produced some Dalmatians who produce lower levels of uric acid in their urine and who are not predisposed to urate stone disease).

Not every human will form purine/urate stones and neither will every Dalmatian. The beginning of successful treatment

and prevention is to obtain an accurate assay of the type of stone by one of the North American stone centers. If confirmed as urates, scrutinize the dog's meals. Avoid non-prescription dog foods containing high amounts of purine-yielding proteins. When some Dalmatians metabolize excessive purines, they may precipitate out urate crystals/stones in their urine. Dog foods with organ meat or by-products should be avoided for Dalmatians forming abnormal urate crystals/stones. A lack of or minimal water in the diet is a major factor contributing to stone formation.

Among stone-forming Dalmatians, the majority form urate/purine stones but some may form other types. Treatment of one stone can worsen another, the reason for the first step to identify its type. Correct assay is essential for the success of today's simple, effective anti-stone treatments and prevention. Of all urate stones, 90 percent are ammonium acid urate, one of the family of urates responsive to simple non-surgical treatment. A conscientious program of anti-urate medication and anti-urate/low-purine diet is highly effective for both treatment and especially for long term prevention of recurrences. The number one type of stone in all breeds is struvite, so identified with urinary tract infections they are nicknamed "infection stones." The treatments of struvite stones vs. urate stones are different and emphasize the importance for accurate assay of the stone being formed if treatment of the Dalmatian is not to be misdirected and fail due to misdiagnosis. Urinary stones in dogs may be found in the upper system (e.g., the kidneys), or in the lower urinary system (e.g., the bladder). Of data only from stone forming Dalmatians, 97 percent of the breed's urinary stones were passed or found in the lower urinary system where treatment is more successful and less expensive than for those in the kidneys.

How is a Stone Former Detected?

A standard urinalysis generally shows if abnormal crystals are forming in the urine long before the crystals "grow up" to mature into a size of stone large enough to obstruct the normal flow of the urinary stream. Urinary pH showing persistent and unchanging abnormal acidity vs. alkalinity may be a warning sign of different types of stones/crystals. If no tests ever are done, stone forming may progress to show advanced symptoms. These are more obviously detectable in male dogs than females because of the marked difference in each gender's urinary anatomy. As a large enough stone is carried down the urinary pathway, it can lodge within the male's penis at a damlike inflexible narrowing of a cartilage, near the os penis. The same size stone may pass uneventfully through female urinary anatomy which does not possess an os penis. Early neutering will predispose males to urinary blockage by decreasing the size of the os penis and narrowing the urethra. It is best to wait until a Dalmatian is between 18 and 24 months before neutering him. When the urinary stream is obstructed by stones or aggregating crystals, the male dog will strain to urinate. No urine will pass or be seen as dribbling only a few drops. The dog will repetitively attempt to urinate with little or no result. Late-stage urinary obstruction in male dogs is thus very visible to the observer aware of these signs and watching for them. Obstructed females with stones may

demonstrate symptoms similar to those of urinary infections, namely more frequent urinating, "accidents" by housebroken bitches and very frequent licking of their genital area. A urinalysis will sort out the difference between a urinary tract infection and urate crystal/stone formation. Some stone-forming dogs will have a sudden flood-like outpouring of urine. It is likely that the stone(s) creating the obstruction were passed thereby opening and restoring the normal flow and pathway of urine. Any obstructed dog, even those who pass stones, should be quickly seen by their veterinarian for workup, including ultrasound evaluation of the lower urinary tract, and embark immediately on a preventive program of anti-stone medication with the proper anti-stone diet.

General Preventive Guidelines for Stone-Forming Dalmatians

- The importance of adding significant amounts of water to dry food cannot be overemphasized! Water in the food dilutes the urate in the urine, making it less likely to precipitate as crystals or stones, produces more urine volume to flush out any crystals that form, and the increased volume in the bowl lowers the purine levels (measured in mg/100g) in the meal. Always "float" dry food in water when feeding. A major goal of prevention is to produce a urine specific gravity (SG) around 1.020
- Have a routine, inexpensive urinalysis done periodically. If centrifuging spins out sediment ("sand" or "gravel") have your vet send it - not the liquid - for assay by one of the urinary stone centers such as The Minnesota Stone Center.
- Obtain fresh urine for testing in a clean and chemically inert container, such as glass. Avoid obtaining a sample after your Dalmatian has recently urinated when crystals or stones may have been already flushed out. Instead, obtain a specimen as "first catch" in the morning before feeding and after urine has sat unemptied in the bladder overnight. Deliver urine to the vet promptly. Do not refrigerate to avoid introducing very questionable temperature-induced crystals forming undesirably as urine cools down from body temperature.
- One major goal of prevention is to maintain a normal plateau of urinary pH 6.5 to 7.0. Dipstick fasting urine from stone formers frequently and keep a diary of pH readings.
- If the pH falls into the acidic area of pH 6.0 or less below normal and stays there over several dipstickings, consult with your vet to re-evaluate the Dal's diet and anti-urate drugs and chemical additives like potassium citrate to alkalinize the abnormally acidic urine and chemically neutralize it. If the pH remains up in the alkaline area of 8.0 or higher above normal over the course of several dipstickings, contact your vet to rule out a possible urinary tract infection and the onset of infection stones, or the need to adjust medication and diet.
- Crystal and stone formation accelerate in stagnant urine. Permit the Dalmatian to urinate as frequently as possible (at least every 4-5 hours if possible) permitting the bladder to be flushed of crystals before they can mature into larger stones capable of obstructing.

Minimize Purine-Yielding Foods

More elaborate listing of foods at:

<https://elevatehealthaz.com/wp-content/Purine%20Table.pdf>

FOODS **HIGHEST** IN PURINES

- anchovies
- brains
- gravies
- herring (including roe)
- liver (calf or beef)
- mackerel
- meat (beef, lamb, pork & ham, veal)
- meat, game (venison, etc.)
- meat soups & broths
- meat, beef extracts & by-products
- mussels
- organ meats (liver, kidney)
- sardines
- scallops
- yeast

FOODS **MODERATELY HIGH** IN PURINES

- asparagus
- breads & cereals, whole grain
- cauliflower
- eel
- fish (fresh & saltwater)
- legumes (kidney, navy & lima beans, lentils, peas)
- mushrooms
- oatmeal
- peas, green
- poultry (chicken, duck, turkey)
- shellfish (crab, lobster, oysters)
- spinach
- tongue
- tripe
- wheat germ & bran

FOODS **LOWEST** IN PURINES

- beverages (coffee, tea, sodas, cocoa)
- butter
- bread & cereal (except whole grain)
- cheese
- eggs
- fats
- fish roe (including caviar)
- fruits & fruit juices (avoid citrus)
- gelatin
- milk (including butter, condensed, malted)
- nuts (including peanut butter)
- pasta (evaluate sauce ingredients separately)
- sugars, fruit syrups, sweets (avoid chocolate)
- vegetables (except those above)
- vegetable & cream soups (made with acceptable vegetables. but not with beef stock)