

Urinary Calculi

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A hard mass of mineral salts in the urinary tract - is a very serious problem normally associated with bucks. In medical books, you will find it under the name of "Urolithiasis". It can result in a painful death in a very short time and is normally the result of some nutritional imbalance.

Clinical signs - Painful or difficult urination. Dribbling of urine and animal being vocal. Straining to urinate with possible contractions of the abdominal muscles. Abdominal pain and possibly stretching out and kicking at the abdomen. Grinding of the teeth. There may be crystals found on the hairs around the end of the penis area where the urine normally flows.

Results of Urinary Calculi - Urinary Calculi is the result of a hard mass of mineral salts in the urinary tract. The bladder and/or the penis area may erupt from the buildup pressure of not being able to urinate and can result in the death of the animal.

Cause - This is most commonly seen in animals that are being maintained in a feedlot environment or pets getting special feed treatment. The makeup of the hard mass of mineral salts varies according to the geographic location of the animals but they are commonly composed of calcium salts and phosphatic complexes.

There are several different types of problems under the common heading of Urinary Calculi::

- **Phosphatic Calculi** - The hard masses are normally formed because of an environment of high-concentrate feed, low-roughage, feed with low calcium-to-phosphorus ratio, high magnesium diets and alkaline urine. A diet mainly made up of grains results in urine with large amounts of phosphorus in it.
- **Silicate Calculi** - This occurs when animals are fed plants grown in sandy areas or water containing high levels of silica. This environment is more common in the western part of the U.S. Feed with high concentrates of silica and high calcium-to-phosphorus ratios supplemented with sodium bicarbonate may result in Silicates Calculi. This can be cereal hays.
- **Oxalate Calculi** - Caused by eating excessive quantities oxalate-containing plants such as sugar beet tops and Halogeton, a fast-growing plant of the Western States.
- **Calcium carbonate stones** - Subterranean clover is high in calcium and extensive grazing may cause this.

Early castration of wethers can also result in Urinary Calculi. Early castration will result in stopping or slowing the growth of length and diameter of the urethra and thus more likely not be able to pass smaller crystals.

Identifying source of the problem - It is important to look at the complete dietary history of an animal. Look at the following sources:

- **grain** - high-grain, low-roughage diets decrease the saliva and increases the amount of phosphorus in the urine. Generally you want grain mixtures to contain a ratio of 2:1 for calcium-to-phosphorus. Cereal grains are not good because they normally contain an abnormally low ratio of calcium-to-phosphorus such as 1:4 to 1:6. Corn contains high amounts of phosphorus and is thus not good for bucks.
- **hay** - grass hays are better for bucks than cereal or legume hays.
- **pasture** - toxic plants may be available.
- **Magnesium** - increased levels of magnesium in a diet with normal calcium-to-phosphorus ratio may result in problems.
- **trace mineral availability** - additional salt consumed will result in the buck drinking more water thus washing out his system.
- **water sources** - limited availability of clean water results in limited urination and thus limits washing any minerals out of the bladder system.
- **supplemented feeding** - a good goat pellet mix should be properly balanced. Supplementing it with feed such as corn, throws the the combined feed out of balance.
- **Deficiency of Vitamin A**

Prevention -

- Availability of fresh, clean water. Decrease the highly saturation of minerals in the urine and decreases the formation of crystals.
- Calcium-to-Phosphorus ratio should be at least 2:1.
- Addition of Ammonium Chloride to the feed decreases the incident of Silica Calculi.
- Excessive protein can cause problems. Dietary protein should be fed to meet but not greatly exceed recommended requirements.
- Sodium chloride added to the diet increases water consumption. The addition of salt can help prevent phosphate-, magnesium-, and silicate-based crystals forming
- Diets and feed such as alfalfa and molasses should be limited or avoided. (we fed small amounts of alfalfa daily to our bucks for two years and did not have any problems with our bucks.)
- Grass hays should be considered the primary forage source for bucks. It has a better balance than legumes for phosphorus crystals prevention.
- Proper Balance levels of calcium, phosphorus and magnesium in the feed is important. Magnesium should be kept below 0.6% and calcium to phosphorus ratio of at least 2:1.
- Ensure Vitamin A is available.

If you have a buck get Urinary Calculi, have the vet submit the crystals to a laboratory for analysis to help determine the source of the problem.

- If calcium oxalate or calcium carbonate calculi are identified, limit or stop feeding legumes such as alfalfa, clover, kudzu.
- If silicate calculi are identified, adding ammonium chloride to the diet may help. Also feeding oats and oat straw should be considered limiting or removing.

Treatments -

- Acepromazine Maleate is a tranquilizer that is given sometimes to help relax the penis muscles and possibly allow any crystals to be passed.
- Removal of flap at the end of the penis is commonly performed. It has shown to restore the urine flow in 66% of cases in early studies.
- Your VETERINARIAN can 'TAP' the bladder, using an 18-19 gauge spinal needle AFTER anesthetizing the animal. This is only done to buy time in order to treat the real problem of removing whatever is blocking the urinary tract.
- Catheterization of the penis and retrograde flushing may remove the crystals causing the problem. After the initial flushing, a treatment of a weak solution of 1 part vinegar to 1 to 4 parts of sterile water to help dissolve the crystals.
- If the penis is not completely stopped from dripping, ammonium chloride can be given to dissolve crystals.
- There are also surgical treatments that can be used by a vet if none of the above corrects the problem.

Because Urinary Calculi often caused sludge-like crystals to form in the bladder, the problem tends to recur in the majority of cases. Thus you need to attack the source of the initial reason for the crystals to form.