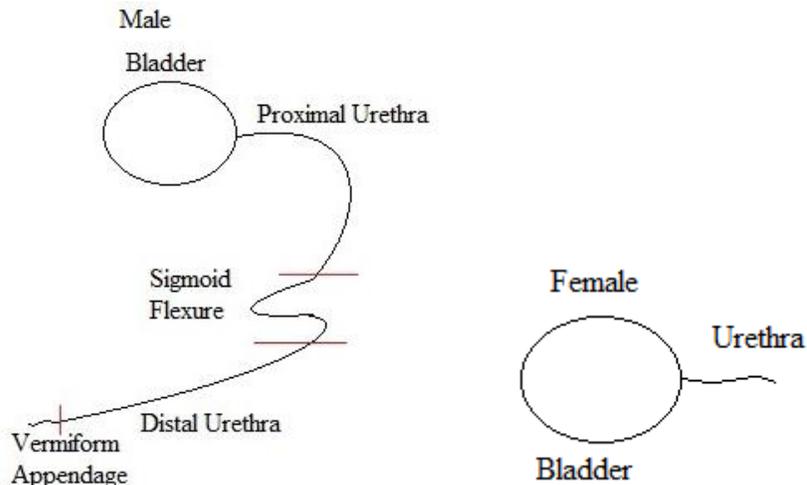


Urinary Calculi

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Most people who have raised goats, sheep, or cattle have come across a castrated male with a urethral blockage due to urinary calculi. This is a serious, painful, and life-threatening problem that is simple to reduce the risk of, and can be very expensive to treat. The classic goat presenting for urinary calculi blockage is an overweight, pet wether who was castrated at a few days to a few months of age, and who has grain as a major part of his diet, although intact males on grass and browse can also become blocked. When a male goat, intact or castrated, becomes blocked this is an emergency situation and he needs to be seen by a veterinarian ASAP. I hope to cover the main points in this handout. This is a summary and guidelines only, not meant to replace good communication with your veterinarian.

1. Anatomy:



This is a rough diagram of the male lower urinary tract system. As you can see there is the bladder, followed by four sections of urethra. In any male animal, the lower urinary tract is much longer than the female's, and this in and of itself predisposes them to a greater chance of becoming blocked simply because there are more places for a stone to become lodged. In male goats, the urethra is narrowed at two points along its length: the sigmoid flexure and the vermiform appendage. These are the two places where urinary stones are most likely to become lodged as they travel downwards, but they can become stuck anywhere in the urethra.

2. Age at Castration:

It has been a common practice to band young males at a few days to a few months of age to castrate them. This was because it was fast and cost effective for producers who would then send them into the food supply and they would have a short life span. However, it has been

found that when males are castrated at such a young age, their urethras do not attain their full size and diameter. Here are two circles, the one on the left represents the urethral diameter of an adult intact male and the one on the right represents the urethral diameter of an adult castrated male.



As you can see, the circle on the right is only about 60% the size of the one on the left. The male with the urethra diameter on the right would have been castrated very young. When males are castrated at a later age, 6 months or older, their urethras attain their full size and are not as narrow and prone to becoming blocked. This is a better option for males who are going to be pets and have a long life span.

3. Diet:

Diet plays a role in the formation of urinary calculi. Animals fed diets high in grain are at a higher risk for developing struvite and/or calcium phosphate stones because of the increased amount of phosphorous in the diet. Animals fed a diet high in legumes such as alfalfa are at a higher risk of developing calcium carbonate stones because of the increased amount of calcium in the diet. Animals who do not drink enough water are at an increased risk for developing urinary calculi. This is because there isn't enough water moving through the bladder often enough for the animal to excrete the calculi forming debris before it develops into stones.

Goats are primarily browsing animals, which means they sample a little of this and a little of that as they go through a field of weeds and brush. They can graze grass, but this is primarily a sheep trait. The majority of a ruminant's diet should be made up of roughage like hay, grass, or browse. This is what their digestive systems are designed to eat and process. People feed grain to give their animals extra energy and nutrients when they are young and growing, pregnant, lactating, or when they are old and need the extra energy. People also give grain during the winter to help their animals maintain their body condition and stay warm.

Animals in different life stages have different energy and nutrient requirements, and adult castrated males have the lowest requirements. They are not growing, they aren't putting energy into reproducing, and unless it has been a very cold winter or they are getting elderly, adult castrated males generally do not need to eat any grain. Goat wethers can very easily live on good grass hay or browse all year around and maintain a healthy body condition. They may love their grain like we love ice cream, but that doesn't mean they should eat it all the time. If you can feel your goat's ribs but can't get your fingers in between them, the goat is likely at a healthy weight.

4. Prevention of Urinary Calculi:

The formation of urinary calculi is multifactorial, so the approach to helping to prevent blockages because of them must also be multifactorial. First, if you are getting a male goat as a pet, wait until they are six months of age until you get them castrated. This will allow their urethras to reach their full size. This can be difficult with Nigerian Dwarfs and Pygmy goats because they reach sexual maturity much faster than their larger cousins, and can start breeding females when they are only a few months old. But for a goat that you want to have around for 10-15 years, waiting a few months is worth it to reduce the risk.

Secondly, pay close attention to what you are feeding them. Goats are the drama queens of the barn yard. They will beg for treats and pout until they get what they want. However, for their own health, adult castrated males, and even intact males, should only be fed good grass hay, with grain only supplemented when they are young and growing, old and need the extra nutrition, or if it's during the winter and they need the extra energy to maintain body condition. This will greatly reduce their risk of forming stones and help them maintain a healthier body weight. And make sure you are offering them salt and minerals to encourage them to drink enough water to remove calculi forming debris in their bladders. The occasional grain treat is okay, but only if it is occasional and only a small handful.

There isn't a fool-proof way to 100% prevent urinary calculi, but making sure your goat is drinking enough water and fed an appropriate diet can go a long way towards it, even if they were castrated at a young age.

5. Signs of Urethral Blockage:

Sometimes you simply can't prevent your goat from becoming blocked, but here is what to look for.

1. Pacing and posturing to urinate but can't or only dribbles
2. Acting bloated, uncomfortable or painful in belly
3. Dry prepuce
4. The longer they are blocked, the more uncomfortable and sicker they act
5. If your goat was showing the above signs, and then suddenly got better, this could be a sign that his bladder has burst. He'll only feel better until he becomes sick from the urine in his belly, and then he'll die within a few days without treatment.

Blockage from urinary calculi is a life-threatening situation for an animal and is very painful. The sooner he is seen by a veterinarian, the better his chances are of survival and healing. Urethral blockages almost always require surgery to bypass the blockage until it can be resolved, or to permanently create a bypass of the urethra because the blockage can't be resolved or there was too much damage to the urethra. Prevention is the best treatment for urinary calculi.