



Texas Agricultural Extension Service

The Texas A&M University System

Urinary Calculi in Beef Cattle

Urinary calculi are the result of minerals deposited within the urinary organs. These formations may occur in either male or female of all species of livestock, but most frequently become a problem in the castrated male ruminant.

The mineral deposits can be of variable sizes, shapes and composition. Urinary calculi found in range-reared calves will be predominantly composed of calcium, magnesium and ammonium phosphates.

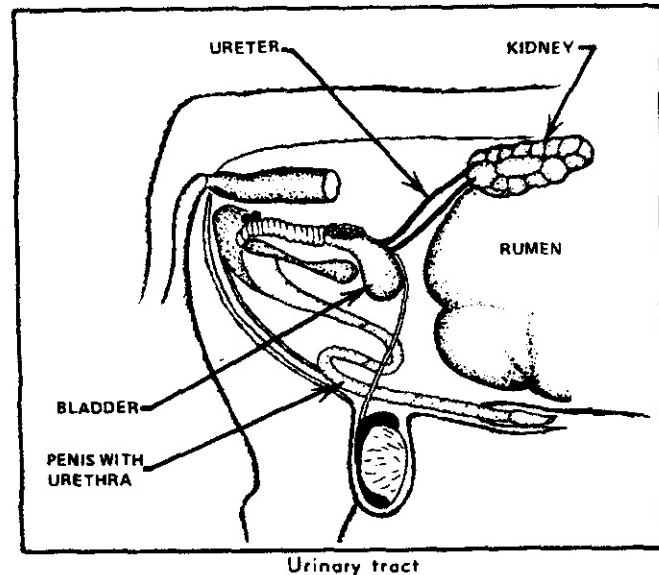
Though calculi are frequently present in bulls and heifers, they may exist in the urinary bladder and create no problem. Females exhibit signs of urinary calculi less frequently than males, as the female urethral passageway is larger with fewer curves so the smaller calculi can more readily pass through.

When the urethral tube becomes blocked, urine production continues causing extension and finally rupture of the urinary bladder or urethral tube. The urine then flows into the abdominal cavity and tissue surrounding the penis. When this occurs, the clinical signs described as "water belly" will be observed.

Because of variations in management, mineral composition of feeds, soil fertilization practices, availability of water, and types of forages and grain available, extensive variation in type and incidence of calculi will be seen. These variations will also be observed from year to year and from one geographical area to another. Because of these variations, information from a specific area may not always apply to another area, and information based on a single season may not apply another year.

Causes from Nutritional Factors

It has been established that rations high in phosphorus are a contributing cause of mineral deposits in the urinary system. Grain concentrates are high in phosphorus, so fattening rations, which usually have a high ratio of concentrate to roughage, contribute to calculi formation. A high silica content in rations may



Urinary tract

Anatomy of the Urinary Tract.

also be a contributing factor. Prairie hay and some oat straws often have high silica content.

Some calculi-forming forages and grains include sorghums, wheat, milo, cottonseed meal, linseed meal and sugar beet tops or pulp. None of these feeds alone may be a major cause but will be a contributing factor when present in rations with a total phosphorous content of 0.5% or more and a low calcium level.

Vitamin A deficiency has often been suggested as a contributing cause of urinary mineral deposits, but controlled research fails to demonstrate that this is so.

General Management

It has been demonstrated in some areas that delaying castration of grazing animals will help prevent urinary stone formation. This is probably due to increased growth of the urinary and reproductive organs of the male, providing a larger passageway of the urethra than in the castrated male. Mineral deposits