Obstructive Urolithiasis

The
Blocked
Goat
Metabolic & Nutritional Disease

Management Disease??
Signs

• Vocalize
• Off feed
• Uncomfortable
• “Constipated”
• Lethargic
Male Goat Problem

- Anatomy – Primary Offender = Wether
Female Goat

- End of intestine
- Anus
- Vulva
- Udder
- Ovary
- Bladder
What are the causes?

- Early Castration
- Over feeding – Grains!!
- Unbalanced Diet: Too much energy, minerals as Calcium, Phosphorus, Magnesium.
  - Inadequate Vitamin A
- Improper Water: Quantity, Quality, Access, Temperature
- Silicate / Oxalate containing plants
What are the consequences?

Rupture of Urinary Bladder = Water Belly
Rupture of Urethra
Death
Why does this happen?

- Narrow long urethra
- Nidus of cell debris & mucus
- Improper mineral balance
- Poor water intake
- Overweight animal
What are the stones?

• Apatite: Calcium phosphate
• Struvite: Magnesium ammonium phosphate
  – Both Grain related
• Silicate – some grasses
• Oxalate – Oxalate accumulating plants
• Calcium carbonate – High clover/legume
Calcium carbonate calculi

Calcium oxalate
Struvite (magnesium ammonium phosphate) crystals
Where is the problem?

Urethral recess

Urethral process
What can be done?

- Amputate Urethral process
- Catheterize – Complications
- Anti-inflammatory drugs
- Urethral dilation – relaxation
What else can be done?

• Multiple surgeries: All have complications. Long term resolution is poor.
• Urethrostomy of various forms
• Tube cystostomy
• Urinary bladder marsupialization
• Others
Tube Cystotomy
Why so much failure?

- Extensive damage before signs
- Another blockage awaiting
- Unable to change environment
- Goat self damage
How can problem be avoided?

• Delay castration: Dehorn at 2-3 weeks, Castrate at 3 months or later – Early maturing!
• Avoid obesity – Goats add fat in abdomen
  – Wethers do not need grain
• Feed balanced diet
• Water: Clean, warm in cool weather
• Certain additives available?
Diet

• Goats are browsers
• Water: clean, warm in cool weather, multiple locations, multiple times.
• Grass based diet + 2-4 ounces alfalfa pellets per goat per day.
  – Adds protein, Ca/P ration 2 – 2.5/1 Control P and Mg levels in diet. Moderate calorie intake.
• Salt at 3-5% of the diet
• Vitamin A – Add Goat mineral
Room for all
Multiple Choice
Mineral feeders

Goat Mineral / Salt

Keep Dry
Goat Mineral Free Choice
Monitor intake – This one goal is 0.25 to 0.35 ounce per goat per day. (1 teaspoon/goat)

For Goats
Not All-breed, Not Sheep & Goat
Math

• Goats eat 3-4 % of body wt per day in DMI
  – 100# goat eats 3-4# DMI per day
  – 2-4 ounces alfalfa pellets – be sure all have access
  – 4% of DMI as salt is 2.0-2.5 ounces of salt per 100#s of goat per day. (1 heaping Tablespoon = 1 ounce)
    • Wet hay and sprinkle with salt – increase slowly
    • Make salt solution and spray hay
    • Less concern when on pasture
  – Monitor goat mineral consumed – can add as per salt application
Vitamin A

- Vitamin A important for cell health
- Vitamin A important – Also can be toxic
- Dose: 100 IU / Kg per day
  - 100# goat = 45 Kg or 4500 – 5000 IU of Vit. A
  - Green grass source of Vit A
  - Vit A stored in the liver
- Purina Goat mineral has 8750 IU/ounce
  - Target 0.25-0.35 ounce per goat per day
Other additives

• Ammonium Chloride: Recommend at 0.5-1% of DMI per day – Controversial?
  – Best used to combat Struvite stones.
  – Consider if raising meat goats and feeding grain
  – Anionic Salts as Soychlor or Biochlor have been tried also
  – Goal of these is to make urine more acid to help dissolve crystals and prevent stones – best with magnesium ammonium phosphate stones.
Summary

• Delay castration
• Water, Water, Water
• Avoid obesity!
• Balanced Diet: Protein, Energy, Minerals (salt), Vitamins
Questions???