



Ruminant Bloat

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Definition and causation

Acute tympanites, regularly referred to as bloat, is a non-infectious disease common among the ruminant species. Bloat is characterized by an abundant accumulation of carbon dioxide (CO₂) and methane (CH₄) gases within the reticulorumen or stomachs of the cow, such that normal pressure is exceeded, and distension occurs. Bloat can be caused by the diet or by some type of esophageal (throat) obstruction.

Types and Clinical Signs

Bloat can be categorized into three main types; diet related free gas, obstructive free gas, and frothy. Their descriptions are as follows:

Diet related free gas bloat: This type of bloat usually occurs with over consumption of concentrate feeds. This leads to a rapid fermentation process within the rumen. Rumen bacteria over produce volatile fatty acids (VFA's) which cause an increase in lactic acid and a lowering of rumen pH. This acidic environment inhibits rumen contractions and allows for gas buildup and bloat.

Obstructive free gas bloat: Physical obstructions in the esophagus can trap gas in the rumen by inhibiting eructation (belching). Blockages can occur when the animal swallows a large object such as whole potatoes, beets, or hedge-row gourds or

whole fruit that becomes trapped within the esophagus.

Frothy bloat: Frothy bloat occurs in animals grazing lush legume pastures. It is generally accepted that a viscous, slimy mass is present which can trap gases and prevent eructation even though intraruminal stomach pressure may be above normal. It is thought that legumes have increased protein and are highly digestible which leads to increased production of frothy bloat.

Clinical signs: Swelling occurs first and greatest at the left paralumbar fossa which is the triangular area located between the last rib and the point of the flank, as the problem persists swelling will appear on the right (**Figure 1**). The degree of swelling may not always indicate the amount of distress the animal is experiencing. Other signs include an arched back with rear feet stretched far back, kicking at the abdomen, staggering gait, vomiting, frequent urination and defecation, labored breathing



Figure 1. Two cattle with varying degrees of swelling from bloat.

with nostrils dilated, tongue extended and eventual collapse, followed by death.

Prevention and Treatment

The best treatment of bloat is prevention. Frothy bloat prevention includes: forage choices (bloat free legumes), field management (growing bloat free legumes with grass), grazing management (uniform and regular intake), and antifoaming agents such as liquid soap detergents and vegetable or mineral oils.

Some legume species are considered to have less risk of bloat than others. Birdsfoot trefoil (*Lotus corniculatus*) is an example of a legume that is considered to have lower risk of causing bloat due to increased amounts of tannins (**Figure 2A**).

Grazing management strategies can include, turning animals out after the dew is off, ensuring that the legume is in the mature stage of its growth cycle, and feeding a dried grass hay before turning out on pasture. One of the most practical methods of frothy bloat prevention is the use of Poloxalene (e.g., Bloat Guard[®]) which may be fed in a block or added to feed (**Figure 2B**).

Diet related free gas bloat can be prevented by feed particle size (larger more coarse particles), consistent feeding regiment (delivery time or grazing time), and feeding ionophores (rumen antibiotics) which help to regulate the rumen bacteria (e.g., Rumensin[®]). Treatment for diet related free gas bloat can include the passage of a tube down the esophagus to the rumen to relieve the gas pressure. Sodium bicarbonate (baking soda) diluted in water can be administered through the tube if acidosis is believed to be the cause of the bloat. Obstructive bloat may also be relieved through the use of a tube, but apply caution to prevent damage to the esophagus. Frothy bloat treatment can include administration of surfactants such as Poloxalene and vegetable or mineral oil to help break down the foam. If the animal is in severe respiratory distress, a rumen trocar and cannula can be utilized (**Figure 3A**). If the animal collapses the interior of the rumen can be exposed by making an incision about 15 cm [6 inches] long in the left paralumbar fossa area (**Figure 3B**). This should be a last resort option as it can cause the rumen contents to leak into the abdomen cavity, risking peritonitis or infection of the abdomen lining.



Figure 2. Birdsfoot trefoil (*Lotus corniculatus*) (A). Bloat Guard[®] pressed block containing poloxalene (B).

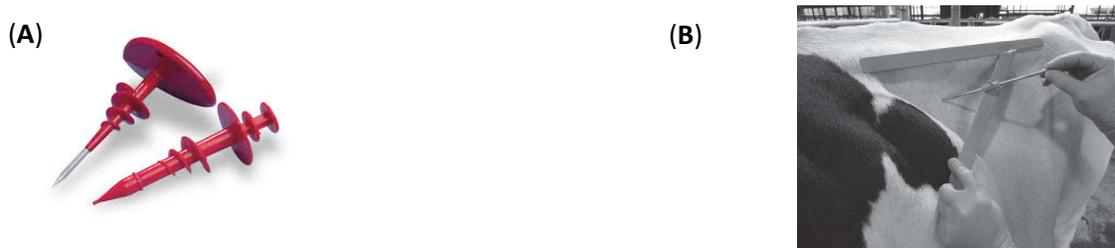


Figure 3. Rumen trocar and cannula can be used to relieve bloat pressure in extreme circumstances (A). Location of the paralumbar fossa area in cattle (B).

Bloat in any form will always be a worry for cattle producers, from large operations to a single 4-H steer. There are many ways to help decrease the risk and treatment of bloat, if or when the issue arises. Prevention should always be the best way to manage this problem.

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