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## **Bloat: Types, Clinical Signs & Treatment** **Bhosale Tushar Rajendra\***

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### **INTRODUCTION**

In ruminants bloat is an over distention of the rumenoreticulum with the gases (mainly carbon & methane) of fermentation, either in the form of a persistent foam mixed with the ruminal contents, called frothy or primary bloat or in the form of free gas separated from the ingesta, called secondary or free-gas bloat. It is one of the major disorders of cattle & buffaloes but may also be seen in goat & sheep. The susceptibility of individual cattle to bloat varies and is genetically determined. Mortality rates as high as 20 % are recorded in cattle & buffaloes grazing bloat-prone pasture, and in pastoral areas, the annual mortality rate from bloat in dairy cows may approach 1 %.

#### **Primary Bloat**

- In primary ruminal tympany, or frothy bloat, the cause is entrapment of the normal air or gases of fermentation in a stable foam.
- Coalescence of the small gas bubbles is inhibited, and intraruminal pressure increases because eructation cannot occur.
- Several factors, both animal and plant, influence the formation of a stable foam.
- The primary foaming agents are soluble leaf proteins, saponins, and hemicelluloses and it is believed to be form a monomolecular layer around gas rumen bubbles that has its greatest stability at about pH- 6.
- Salivary mucin is antifoaming, but saliva production is reduced with succulent forages.
- Bloat is most common in livestock grazing legume or legume-dominant pastures, particularly Lucerne, ladino, and red and white clovers, but also is seen with grazing of fresh green cereal crops, rape, kale, turnips, and legume vegetable crops.
- Legume forages such as lucerne and clover have a higher percentage of protein and are digested more quickly.
- Frothy bloat also is seen in feedlot cattle, and less commonly in dairy cattle & buffaloes, on high-grain diets. The cause of the foam in feedlot bloat is uncertain but is thought to be either the production of insoluble slime by certain species of rumen bacteria in cattle fed high-carbohydrate diets or the entrapment of the gases of fermentation by the fine particle size of ground feed.

#### **Secondary Ruminal Tympany**

- Secondary ruminal tympany, or free-gas bloat, physical obstruction of eructation is caused by esophageal obstruction due to a foreign body (e.g. potatoes, apples, turnips, and kiwifruit),

stenosis, or pressure from enlargement outside the esophagus (as from lymphadenopathy or sporadic juvenile thymic lymphoma).

- Interference with esophageal groove function in vagal indigestion and diaphragmatic hernia may cause chronic ruminal tympany. This also occurs in tetanus.
- Tumors and other lesions, such as those caused by infection with *Actinomyces bovis*, of the esophageal groove or the reticular wall are less common causes of obstructive bloat.
- Ruminal tympany also can be secondary to the acute onset of ruminal atony that occurs in anaphylaxis and in grain overload; this causes a decrease in rumen pH and possibly an esophagitis and rumenitis that can interfere with eructation.
- Ruminal tympany also develops with hypocalcemia. Chronic ruminal tympany is relatively frequent in calves up to 6 months old without apparent cause; this form usually resolves spontaneously.
- Unusual postures, particularly lateral recumbency, are commonly associated with secondary tympany.
- Ruminants may die of bloat if they become accidentally cast in dorsal recumbency or other restrictive positions in handling facilities, crowded transportation vehicles, or irrigation ditches.

#### **Clinical Signs (Primary Bloat)**

- In primary pasture bloat, the rumen becomes obviously distended suddenly, and the left flank may be so distended that the contour of the paralumbar fossa protrudes above the vertebral column; the entire abdomen is enlarged.
- As the bloat progresses, the skin over the left flank becomes progressively more taut and, in severe cases, cannot be “tented”.
- Dyspnea and grunting are marked and are accompanied by mouth breathing, protrusion of the tongue, extension of the head, and frequent urination.
- Rumen motility does not decrease until bloat is severe. If the tympany continues to worsen, the animal will collapse and die.

#### **Clinical Signs (Secondary Bloat)**

In secondary bloat, the excess gas is usually free on top of the solid and fluid ruminal contents, although frothy bloat may be seen in vagal indigestion when there is increased ruminal activity. Secondary bloat is seen sporadically. There is tympanic resonance over the dorsal abdomen left of the midline. Free gas produces a higher pitched ping on percussion than frothy bloat. The distention of the rumen can be detected on rectal examination. In free-gas bloat, the passage of a stomach tube or trocarization releases large quantities of gas and alleviates distention.

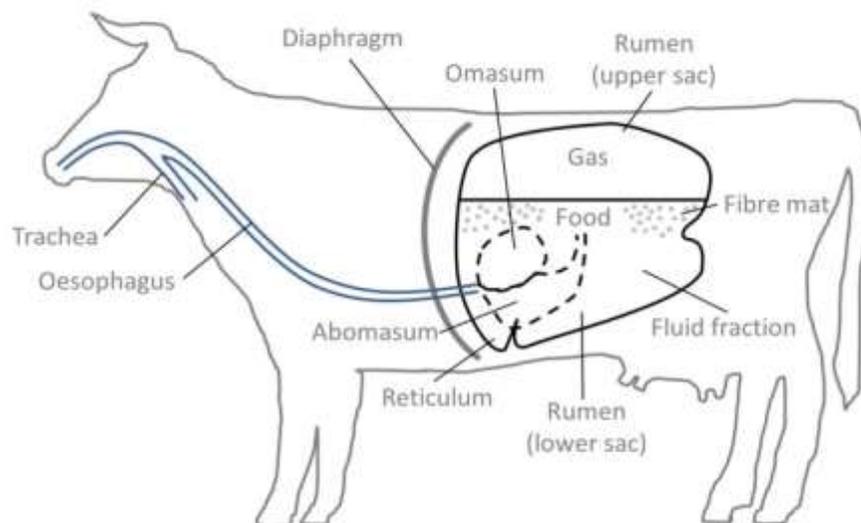
#### **Treatment**

In life-threatening cases, an emergency rumenotomy may be necessary; it accompanied by an explosive release of ruminal contents and, thus, marked relief for the cow. Recovery is usually uneventful, with only occasional minor complications.

A trocar and cannula may be used for emergency relief, although the standard-sized instrument is not large enough to allow the viscous, stable foam in peracute cases to escape quickly enough. A larger bore instrument (2.5 cm in diameter) is necessary, but an incision through the skin must be made before it can be inserted through the muscle layers and into the rumen. If the cannula fails to reduce the bloat and the animal's life is threatened, an emergency rumenotomy should be performed. If the cannula provides some relief, an antifoaming agent can be administered through the cannula, which can remain in place until the animal has returned to normal, usually within several hours.

When the animal's life is not immediately threatened, passing a stomach tube of the largest bore possible is recommended. A few attempts should be made to clear the tube by blowing and moving it back and forth in an attempt to find large pockets of rumen gas that can be released. In frothy bloat, it may be impossible to reduce the pressure with the tube, and an antifoaming agent should be administered while the tube is in place. If the bloat is not relieved quickly by the antifoaming agent, the animal must be observed carefully for the next hour to determine whether the treatment has been successful or whether an alternative therapy is necessary.

A variety of antifoaming agents are effective, including vegetable oils (eg, peanut, corn, soybean) and mineral oils (paraffins), at doses of 250-500 ml. Dioctyl sodium sulfosuccinate, a surfactant, is commonly incorporated into one of the above oils and sold as a proprietary antibloat remedy, which is effective if administered early. Poloxalene (25-50 g, PO) is effective in treating legume bloat but not feedlot bloat. Placement of a rumen fistula provides short-term relief for cases of free-gas bloat associated with external obstruction of the esophagus.



**Fig 1: Ruminal Tympany / Bloat.**

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