



ISSN: 2456-2912

VET 2023; 8(4): 310-312

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www.veterinarypaper.com

Received: 03-03-2023

Accepted: 06-04-2023

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Surgical management of acute bloat by emergency rumenotomy: A review of four cases

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Abstract

A total of four Crossbred Jersey cows aged 5 to 10 years weighing around 200 to 350 Kg were presented to VCC, River with the history of distended abdomen, respiratory distress and reduced appetite. On clinical examination, the animals were dull, depressed, reluctant to move, an extension of head, and frequent urination. On examination of rumen liquor using rumen extraction pump, the fluid was straw-coloured, foul odour, pH of 5 to 6 and nil rumen protozoa and amphistomes in all four cases were noticed. Animals were treated medically with fluid therapy and oral liquid paraffin @ 2 ml/kg body weight for 2 days. Emergency rumenotomy was performed in all the animals which failed to respond therapeutically. Postoperatively, fluid therapy was given for 5 days twice daily, intramuscular administration of Inj. Streptopenicillin @ 10 mg/kg body weight and Inj. Chlorphenaramine maleate @ 0.2 mg/kg body weight for 5 days and Inj. Meloxicam @ 0.2 mg/kg body weight for 3 days. Wound dressing was done using 5% povidone-iodine and sutures were removed on 10th postoperative day and all animal recovered uneventfully.

Keywords: Acute bloat, cow, emergency rumenotomy, over feeding of rice

Introduction

Bloat is an over distension of the rumeno-reticulum with the gases of fermentation in the form of persistent foam mixed with the ruminal contents or in the form of free gas separated from the ingesta (Yirdachew and Mekonnen, 2022) [9]. Frothy bloat occurs in cattle fed mainly with legumes and lush grasses as well as feedlot cattle however, free gas bloat is less common on pasture or in the feedlot (Hartnack *et al.*, 2015) [6]. The diagnosis of frothy bloat is essential for treatment which is based on the history, clinical signs like distended abdomen, dyspnoea, bruxism, open mouth breathing, protrusion of tongue and extension of head (Lehmkuhler and Burris 2011) [7]. On examination, if ruminal pump moves freely when it is passed then it is a free gas bloat; whereas, if occluded by frothy rumen contents, it is described as frothy bloat and can be treated with anti-foaming agents like dioctyl sodium sulpho succinate, polaxalene and sodium bicarbonate (Berg *et al.*, 2013) [1]. The trocar and cannula method and the emergency rumenotomy should be used only when an animal cannot be relieved with the stomach tube and or failed to respond therapeutically (Majak, 2005) [8]. The present paper describes about successful surgical management of rumenotomy in four cows.

A total of four Crossbred Jersey cows aged 5 to 10 years weighing around 200 to 350 Kg were presented to Veterinary Clinical Complex, RIVER with a history of the distended abdomen, respiratory distress and reduced appetite (Figure 1). The animal particulars, calving history, feeding pattern, etiological factors and previous treatment adopted are presented in Table 1. On clinical examination the animals were dull, depressed, reluctant to move, an extension of head, and frequent urination. On examination of rumen liquor using rumen extraction pump, the fluid was straw-coloured, foul odour, pH of 5 to 6 and nil rumen protozoa and amphistomes in all four cases. Physiological, haematological and biochemical parameters were within normal range. Animals were treated medically with fluid therapy and oral liquid paraffin @ 2 ml/kg b. wt. for 2 days. All the animals were failed to respond therapeutically and emergency rumenotomy was carried out.

Table 1: Animal particulars, calving history, feeding pattern, etiological factors and previous treatment adopted

Animal	Age	Calving	Feeding pattern	Etiology	Previous treatment adopted
Cross Bred Jersey	10yrs	4 th lactation	Grazing	Overfeeding of rice	Fluid therapy, Megablota
Cross Bred Jersey	8yrs	3 rd lactation	Grazing	Feeding of bran	Bloatocare, Megablota
Cross Bred Jersey	5yrs	1 st lactation	Grazing	Over feeding of rice	Megablota
Cross Bred Jersey	7yrs	2 nd lactation	Grazing	Over feeding of rice	Megablota

**Fig 1:** Animal showing distended abdomen

Anaesthesia and Surgical procedure

Left proximal paravertebral nerve block and Inverted L block was carried out using 2% Lignocaine hydrochloride (LH) (Figure 2). The site at the cranial edges of the transverse processes of L1, L2 and L3 and at a point 2.5 to 5 cm off the dorsal midline is prepared aseptically and skin was desensitized. The needle was then passed ventrally to desensitize T₁₃ until it contacts the transverse process of L1. The needlepoint was advanced to the cranial edge of the transverse process approximately 1 cm to pass through the intertransverse fascia. Using 2.5 cm needle, 10 ml of 2% LH was injected with little resistance to desensitize the ventral branch of T₁₃. The needle was then withdrawn 1-2.5 cm above the fascia and dorsal surface of the transverse process and 5 ml of solution was injected to desensitize the dorsal branch of the nerve. Similarly, L1 and L2 were desensitized like T₁₃ (Haben, 2020) [5].

A vertical flank incision 15 to 20cm long was made commencing about 5 cm below the lumbar transverse process cutting through skin, fascia, oblique abdominis externus and internus, transverse abdominis and parietal peritoneum. Muscles were separated and rumen wall was fixed to the skin edges by temporary through-and-through mattress sutures before opening the rumen to prevent spillage of the content. Short incision was made on the rumen for access to remove the contents to 1/3rd capacity. Around 80 kg of frothy ruminal contents were removed (Figure 3). After emptying of ruminal content, reticulum was examined for the presence of foreign body. Before closing the rumen wall, rice bran mixed with jaggery and rumen feed supplement bolus were placed inside the rumen. Rumen wall was closed by crushing followed by lembert suture using chromic catgut size 2 (Figure 4). Abdominal muscles such as peritoneum, transverse abdominis, oblique abdominis externus and internus were closed by ford interlocking suture pattern and subcutaneous

layer was closed by simple continuous suture pattern using chromic catgut size 2, respectively and skin were closed by cross mattress suture using braided silk size 2 (Figure 5).

Surgery of the rumen is commonly performed in cattle to relieve a variety of conditions affecting the fore stomachs and rumenotomy is most commonly performed to remove foreign bodies or to relieve ruminal tympany (Fesseha, 2005) [3]. In the present case, all the cows were overfed with rice leading to distension of rumen, respiratory distress and reduced appetite and this is in accordance with the findings of Fubini *et al.* 2018 [4], who stated that grain overload is a metabolic disorder in ruminants associated with over ingestion or a sudden change to rapidly fermentable concentrate feeds. Overfeeding of rice and bran causes acute bloat which leads to severe loss of production and production ability. In all the animals, emergency rumenotomy was performed which failed to response therapeutically. Post-operatively, all the animals were maintained with Inj. Dextrose Normal saline @ 10 ml/kg body weight, Inj. Ringers Lactate @ 10 ml/kg body weight for 3 days twice daily i/v, Inj. Streptopenicillin @ 10 mg/kg body weight and Inj. Chlorpheniramine maleate @ 0.2 mg/kg body weight for 5 days and Inj. Meloxicam @ 0.2 mg/kg body weight for 3 days, i/m. On 2nd postoperative day, rumination was noticed and all the animals were treated with rumen cud transfer and straw tea which is in accordance with Depeters and George, 2014 inferred that rumen fluid from healthy cattle provides varied microorganisms including bacteria, protozoa, fungi, and archaea that can repopulate the rumen with nutrients and energy to the rumen microbial population. Results of the study indicated that acute bloat can be treated by rumenotomy which occurred mainly due to severe acidosis and carbohydrate engorgement in cattle. Feeding and voiding habit was noticed in all animals on 5th postoperative day (Figure 6). Wound dressing was done using 5% povidone iodine and sutures were removed on 10th postoperative day. According to Hartnack *et al.*, 2015 [6] common complications of rumenotomy include incisional abscess, seroma, continuing regurgitation and peritonitis. However, in the present case no such raw complications were seen and all the animals made an uneventful recovery. All the owners were advised to avoid feeding of rice.

**Fig 2:** Proximal paravertebral nerve



Fig 3: Digested frothy ruminal contents



Fig 4: Suturing of the rumen wall



Fig 5: Skin closure



Fig 6: On 5th postoperative day, the feeding and voiding habit was normal

Conclusion

An acute bloat is often fatal and most frequently occurs in animals that have been recently fed abundant quantities of succulent forages or grains, which is the major predisposing factor and requires immediate medical intervention. This resulted in a serious health impact on the cattle and major economic importance for the well-being of the farmer.

Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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