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Surgical management of ruminal impaction in a crossbred holstein-friesian cow

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Abstract
A 3-year-old female Holstein Friesian crossbred cow was presented to the Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal, with complaints of reduced feed intake, abdominal distension and scanty faecal output for the past four days. Clinical examination revealed a normal rectal temperature, pale mucous membranes and a hard, doughy rumen with diminished ruminal sounds and contractions. Rectal palpation indicated a firm rumen occupying the entire left abdominal quadrant. Haematological analysis showed elevated total leukocyte count and neutrophil percentage, suggestive of neutrophilic leucocytosis. Biochemical parameters were within normal limits and ultrasonographic evaluation revealed no significant abnormalities. Initial medical management with oral laxatives and intravenous calcium Boro gluconate failed to restore rumen motility. A standard laparo-rumenotomy was performed under strict aseptic conditions, during which large quantities of indigestible feed material were manually evacuated. The rumen was replenished with jaggery, rice bran and probiotics and the surgical site was closed following standard layered closure techniques. Post-operative care included fluid therapy, antibiotics, analgesics, and daily antiseptic dressing for five days. The cow resumed normal feeding and made a complete, uneventful recovery.

Keywords: Holstein Friesian cow, abdominal distension, rumen impaction, neutrophilic leucocytosis, rumenotomy

Introduction
The rumen, the largest compartment of the ruminant stomach, plays a crucial role in microbial fermentation and the digestion of fibrous plant materials [6]. Rumen impaction is defined as the accumulation of ingesta within the rumen, leading to obstruction of the normal passage of contents through the gastrointestinal tract [1, 4] Predisposing factors include poor water intake, low-fiber or high-grain diets, abrupt changes in feed or grazing patterns, and stress. Rumen impaction is more commonly encountered in pregnant cattle and in animals below eight years of age. Clinically, the condition presents with progressive weight loss, diminished milk production (often accompanied by anorexia), and is associated with high mortality, resulting in considerable economic losses to farmers [4]. Impaired ruminal outflow can result in secondary complications including abdominal distension, reduced feed consumption, and progressive emaciation. Without timely intervention, the condition may prove fatal. Standard management involves fluid therapy, use of laxatives and appropriate dietary adjustments [4]. Advanced rumen impaction often requires surgical evacuation through rumenotomy. Prevention relies on proper dietary fiber intake, sufficient water supply and gradual adjustments to feeding regimens [3]. The present case report describes the signalment, clinical findings, surgical procedure, intraoperative observations, and outcomes following exploratory rumenotomy in a dairy cow.

Case History
A three-year-old Holstein Friesian crossbred cow was presented to the Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal, with a four-day history of

reduced feed intake, abdominal distension, scanty faecal output and decreased milk production. Physical examination revealed a normal rectal temperature, pale mucous membranes and a hard, doughy rumen with diminished ruminal sounds and contractions. Rectal palpation confirmed a firm, distended rumen occupying the left abdominal quadrant. Haematological evaluation indicated neutrophilic leukocytosis, while serum biochemical parameters remained within normal limits. Ultrasonographic examination did not reveal any significant abnormalities. Initial medical management with oral laxatives and intravenous calcium borogluconate failed to produce clinical improvement. Due to the lack of response to conservative therapy and the persistence of clinical signs, an exploratory rumenotomy was promptly performed.

Treatment:

The surgical procedure was performed with the cow restrained in a standing position. The left paralumbar fossa was aseptically prepared following standard surgical protocols (Fig- 1). A proximal paravertebral nerve block (Fig- 2) was administered using 2% lidocaine to desensitize the dorsal and ventral branches of the T13, L1, and L2 spinal nerves, ensuring adequate anaesthesia of the surgical site. A vertical skin incision approximately 30 cm in length was made on the left flank, just ventral to the transverse processes of the lumbar vertebrae (Fig- 3). The incision was extended sequentially through the external abdominal oblique, internal abdominal oblique and transverse abdominal muscles, followed by the peritoneum (Fig- 4). A Weingarth's rumen frame was then applied to anchor the rumen to the abdominal wall, thereby minimizing the risk of peritoneal contamination with ruminal contents. A controlled incision was made on the rumen wall, exposing a substantial quantity of impacted feed material. The impacted contents were manually evacuated and approximately two-thirds of the ruminal contents were removed (Fig- 7). Before closure, the rumen was replenished with rumen-filling agents, including rice bran, jaggery and probiotic bolus, to restore functional volume and promote microbial activity. The rumen was closed using a two-layered inverting suture technique, comprising a Cushing pattern followed by a Lembert pattern. The abdominal wall was closed in three layers with a Ford interlocking suture using No. 2 catgut (Fig- 5). The subcutaneous tissue was approximated using a simple continuous pattern with No. 2 catgut and the skin was closed with a horizontal mattress suture using No. 2 cotton thread (Fig- 6).

Postoperatively, fluid therapy and antibiotics were administered for five days and analgesics for three days. Soft, semi-solid feed was introduced on the fifth postoperative day, with a gradual transition to normal feed by day ten. Sutures were removed on the twelfth postoperative day. The animal recovered uneventfully without any complications.

Discussion

Rumen impaction results from the accumulation of indigestible or poorly digested feed materials within the rumen, leading to obstruction of normal digestive flow. Clinically, affected animals exhibit signs such as reduced appetite, generalized weakness, abdominal distension and diminished or absent faecal output [5]. In the present case, similar clinical signs were observed over a four-day period. Due to the lack of improvement in feed intake and faecal passage, the animal was subjected to an exploratory rumenotomy. A comparable case was reported by [2], where the rumen was impacted with a substantial quantity of plastic materials, necessitating surgical removal. In both instances, exploratory rumenotomy served as a definitive diagnostic and therapeutic intervention.

Surgical management is often warranted in severe cases where medical therapy fails to resolve the impaction. Accurate diagnosis is essential for timely intervention and favorable outcomes. Additionally, educating farmers on the significance of feed quality, adequate fiber content, and consistent feeding practices is crucial in preventing rumen impaction.

Fig 1: Prepared surgical site

Fig 2: Administering paravertebral nerve block

Fig 3: Skin incision

Fig 4: Muscle incision

Fig 5: Muscle suture

Fig 6: Skin suture

Fig 7: Evacuated ruminal content

Conflict of Interest
Not available

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