Indian J Anim Health (2025), 64(1): 195 - 196
DOI: https://doi.org/10.36062/ijah.2025.10824

Short Communication

Surgical approach towards cystorrhexis of a non-descript male calf- A case report

S. Mondal[1], D. Pal[1], B. Mahata[1], F. Patra[1], B. Alathi Reddy[1], K. P. Mohith Raj[1], D. K. Sarkar[1], C. B. Reddy[1] and D. Ghosh[1*]

[1]Department of Veterinary Surgery and Radiology, West Bengal University of Animal and Fishery Sciences, Kolkata-700 037, West Bengal, India

Abstract

The case was represented as a 6-month-old Indian non-descript male calf with a chief complaint of anuria with a distended abdomen for 48 hours. Clinical examination revealed fluid thrill on ballottement of ventro-lateral aspect of abdominal cavity. Moreover, abdominocentesis was done under aseptic conditions, indicating the fluid that resembled urine. The case was assumed to be cystorrhexis, which may have occurred due to obstructive urolithiasis, finally resulting into uroperitoneum. Surgical intervention involved cystorrhaphy and tube cystotomy with Foley's catheter through ventral paramedian site. Administration of supportive medications like appropriate choice of fluid to correct electrolyte and acid-base balance, especially for preventing shock, one broad spectrum antibiotic, anti-inflammatory drug, urinary acidifier and cellulolytic agent like ammonium chloride to the animal in the post-operative days. The calf was recovered after 2 weeks of surgery without any complications.

Keywords: Cystorrhaphy, Cystorrhexis, Fluid thrill, Tube Cystotomy, Uroperitoneum

Highlights

- Anuria followed by cystorrhexis is a fatal condition in ruminants under field condition.
- Cystorrhaphy followed by Foley's catheter tube cystotomy was done under proper anaesthesia.
- Appropriate medicinal support and good management accelerated the healing process.
- The animal made an uneventful recovery within 14 days post-operative.

Cystolithiasis, which ultimately results into anuria, is a very common clinical case of ruminants under field condition with occurrence of about 92.92% compared to other domestic breeds (Sharun *et al.*, 2020). More often, it goes untreated for several days and leads to a rupture of the urinary bladder, known as cystorrhexis, which is a fatal condition for animals if it goes untreated. Though the exact aetiology is unknown, in most cases, the predisposing factor has been encountered as hampered feeding pattern, metabolic status, especially disbalance in calcium and phosphorus ratio, which is believed to be one of the major factors responsible for anuria (Mahajan *et al.*, 2017). Although, altered urine pH, lack of inhibitors for crystallization, infection, deficiency of vitamin A and also high amount of oestrogen is believed to be the risk factors behind occurrence of anuria (Yohannes and Tesfay, 2024). It is necessary to approach the conditions in earliest manner, as delaying ultimately leads to rupture of the bladder as discussed in the following texts.

A 6-month-old Indian non-descript male calf was brought with chief complaint of anuria for past 2 days along with bilateral distension of abdomen, anorexia, and dullness. During clinical examination, fluid thrilled condition could be palpated on the ventro-lateral side of the abdomen (water belly condition). Needle aspiration was done under aseptic condition to check the nature of the accumulated fluid inside (Fig. 1). The fluid had a similar pH as that of urine, and also the ammoniacal smell and frothy nature could be considered as urine and suspected of uroperitoneum caused by bladder rupture.

After considering all the conditions, emergency cystorrhaphy was performed followed by tube cystotomy. Anaesthesia was achieved by sedating the calf with xylazine-HCl @ 0.1 mg/kg body weight intramuscularly (Ramya *et al.*, 2024) and administration of lignocaine-HCl @ 0.1 mg/kg body weight epidurally at the level between L6 and S1(Ismail, 2016). Amoxicillin and meloxicam were administered @ 10 mg/kg body weight intramuscularly (Islam *et al.*, 2016) and @ 0.5 mg/kg body weight subcutaneously (Shock *et al.*, 2019), respectively. The same amoxicillin and meloxicam therapy was advised for 5 days post-operative treatment along with ammonium chloride salt @ 10 gm/kg feed on a daily basis for 3 weeks. The abdomen was approached from the left ventral paramedian site after attaining the aseptic conditions and preparation as per routine method (Fig. 2 & 3). Following the opening of the peritoneum layer, a large amount of fluid was encountered, possibly a mixture of urine and peritoneal

*Corresponding Author, E-mail: drdghosh08@gmail.com

Surgical management of cystorrhexis in a calf

Fig. 1. Aspiration of the abdominal fluid

Fig. 2 & 3. Preparation and approach of the surgical site

Fig. 4. Presence of large amount of ammoniacal fluid suggestive of cystorrhexis

Fig. 5. Placement of tube cystostomy catheter (Foley's catheter) post-repair of the bladder

fluid (Fig. 4). An appropriate amount of intravenous fluid and corticosteroid was given to prevent shock. Following the incision, the bladder was identified and repaired with size 0 catgut in double layered cushion suturing technique, and Foley's catheter no. 8 was inserted as usual manner (Fig. 5). The peritoneum, muscle, subcutaneous layer and skin were sutured in a routine procedure. The calf was placed in sternal recumbency and showed desired recovery following 2 h post-surgery. Systemic antibiotics, urinary acidifier, and anti-inflammatory therapy were advised post-operatively, along with local dressing. After 2 weeks of operation, the calf recovered uneventfully. The Foley's catheter was removed after 2 weeks of the surgery, and advised for dressing and administration of 10% povidone iodine through the catheter track in order to induce healing of the catheter track, which was also healed according to the owner's report following 10 days after the dressing started.

Despite various surgical techniques and preventive treatments, the prognosis of urolithiasis in bovine is still considered unpredictable. The formation of the calculi attains complex processes and several phases starting from the nidus formation, and to the concentration of urine and salt precipitation from the urine (Loretti *et al.*, 2003). Along with the risk factors, the environmental conditions such as during peak winters, the prevalence of the liths are more due to the less intake of water and more saturation of the urine with more solutes than the normal usual concentration (Thakur *et al.*, 2020). In studies, several animals were provided more grain-rich diets containing more phosphorus ratio, which is believed to be the reason behind the imbalance of the calcium and phosphorus ratio leading to lith formation (Sharun *et al.*, 2020). The prognosis mainly depends on the condition of the patient during presentation and the earlier approach for surgical correction. Delayed cases have shown poor recovery, especially in cases with uremic conditions including loss of body weight, ammoniac odour from the skin, impaired renal function and anemia as shown in many studies (Kataria *et al.*, 2022).

In the present study, the case was reported with a slight delay, although it could be managed with desired prognosis and recovery. It is necessary to attain the cases as soon as possible and also for the owner to report such incidents in cases like cessation of urine since several hours or a day. With the earliest approach, it is possible to address such a situation in a more precise manner and also with a better outcome of the recovery.

Conflict of interest: The authors certify that there is no conflict of interest in the publication of the article.

Author's contribution: SM: Case study and surgical management; DP: Conception, design and surgical management; BM, FP, BAR, KPMR, DKS, CBR: Surgical management and follow-up; DG: Data curation and interpretation.

Data availability statement: All the data supporting the research findings have been presented in this paper. The corresponding author is willing to provide the raw data upon reasonable request.

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Received- 29.08.2024, Accepted- 08.12.2024, Published-27.03.2025 (Online),01.06.2025 (Print)
Section Editor: Prof. S. K. Nandi, Associate Editor