

Indian Journal of Modern Research and Reviews

This Journal is a member of the '*Committee on Publication Ethics*'

Online ISSN:2584-184X



Research Article

Diagnosis and Surgical Management of Anuria in A Buck-by-Tube Cystotomy

Samsamul Hoque ^{1*}, Mamun Sohel ², Shonkor Kumar Das ³, Mozammel Hoque ⁴

¹ Assistant Professor, Department of Veterinary Surgery and Radiology, JIS College of Veterinary and Animal Sciences (JISCOVAS), Mogra, Hooghly, West Bengal, India

² Assistant Professor, Department of Veterinary Medicine, JIS College of Veterinary and Animal Sciences (JISCOVAS), Mogra, Hooghly, West Bengal, India

³ Associate Professor, Department of Veterinary Anatomy, JIS College of Veterinary and Animal Sciences (JISCOVAS), Mogra, Hooghly, West Bengal, India

⁴ Dean, Department of Veterinary Anatomy, JIS College of Veterinary and Animal Sciences (JISCOVAS), Mogra, Hooghly, West Bengal, India

Corresponding Author: * Samsamul Hoque

DOI: <https://doi.org/10.5281/zenodo.23185550>

Abstract

Emergency tube cystotomy was performed under general and local anaesthesia. A Foley catheter was inserted into the bladder through a subcutaneous tunnel and secured to facilitate urinary drainage. The surgical site was routinely disinfected, and the incision was closed using standard suturing techniques. Postoperatively, tetracycline (10 mg/kg), meloxicam, and oral ammonium chloride were administered. The catheter was removed after 10 days, with complete recovery and no postoperative complications. This case highlights a practical approach to managing obstructive anuria and may be useful for veterinary clinicians, graduates, and field-level practitioners.

Manuscript Information

- ISSN No: 2584-184X
- Received: 07-08-2026
- Accepted: 27-09-2026
- Published: 06-10-2026
- MRR:4(10); 2026: 12-16
- ©2026, All Rights Reserved
- Plagiarism Checked: Yes
- Peer Review Process: Yes

How to Cite this Article

Hoque S, Sohel M, Das S K, Hoque M. Diagnosis and Surgical Management of Anuria in A Buck-by-Tube Cystotomy. Indian J Mod Res Rev. 2026;4(10):12-16.

Access this Article Online



www.mrrjournal.in

KEYWORDS: Anuria, Diagnosis, Surgery, Management, Buck, Tube cystotomy

INTRODUCTION

Bucks are predisposed to obstructive urolithiasis due to a combination of nutritional and anatomical variables. They typically develop uroliths at the distal sigmoid flexure, close to the retractor penis muscle's insertion, or in the vermiform appendage called the urethral process (VanMetreDC *et al.*, 2002). The urethral diameter is narrowed in each of these locations. Urinary bladder rupture or local urethral rupture may occur from urethral blockage at various locations.

Animals on high-grain diets frequently develop struvite (magnesium ammonium phosphate) and apatite (calcium phosphate) uroliths (HayL *et al.*, 1991; HoarDW *et al.*, 1970) while legume-eating animals are more likely to develop calcium carbonate uroliths (ManningRA *et al.*, 1986). Plants that contain oxalate may be linked to calcium oxalate stones (McIntoshGH, 1978)

Urine pH plays a crucial role in determining the availability and binding capacity of urolith components (VanMetre *et al.*, 2002; Hay *et al.*, 1991; Jensen *et al.*, 1979). Struvite, apatite, and calcium carbonate uroliths are known to precipitate in alkaline urine 8–10 (HoarDW *et al.*, 1970). While apatite stones form at a urine pH of 6.5 to 7.5, struvite crystallisation only takes place at a pH range of 7.2 to 8.4. (ElliotJS *et al.*, 1985) Silicate or calcium oxalate uroliths may not be significantly impacted by urine pH.

Obstructive urolithiasis in bucks has been corrected with medical treatment, but the result is an unrewarding one. Treatment of obstructive urolithiasis is typically surgical once the obstruction is complete. Surgical tube cystectomy is the most commonly used treatment for long term management of obstructive urolithiasis in bucks. It redirects the urine through a catheter placed from the urinary bladder and exiting through the abdominal wall. The success rate of this technique has been reported to be 80% after 1 month of the postoperative period (Fazili *et al.*, 2012). The advantages of this technique are that it is a simple procedure, highly field applicable, has a relatively short duration of anaesthesia, and attains a full urethral patency in a short period of time.

The present study described the clinical signs and surgical management of obstructive urolithiasis.

Case History and Clinical Observation

A one-year-old buck weighing 30 kg was presented to Veterinary Clinical Complex, Mogra with a history of inability to micturate, anorexia, lethargic. The owner reported that the animal was unable to micturition till three days. Buck was subjected to a thorough clinical examination to check the condition. Physical examination was done to check the status of the urethra and urinary bladder, and physiological parameters like heart rate (H/R, beats/minute), respiratory rate (R/R, beats/minute), rectal temperature (°C), and colour of the mucus membrane, dehydration status by skin tenting test for confirmation of the tentative diagnosis. Clinical examination revealed signs of abdominal distension, incoordination in movement and pain during palpation of the lower abdomen. Intraoperatively, the bladder was examined to determine whether it was intact/ruptured, appearance of the bladder (smooth, rough, inflamed, and necrosed). Animals were stabilised preoperatively with fluid therapy and supportive therapy for those animals which have severe dehydration and uraemia as the case required. Stabilised animals were prepared for tube cystotomy and operated on the same day.

Surgical Treatment and Postoperative Care

The surgical intervention for the Anuria case was performed as an emergency Tube cystotomy under general anaesthesia. Preoperative preparation began with the administration of intramuscular Atropine sulphate (0.04 mg/kg, IM) to reduce excessive salivary and respiratory secretion, followed by xylazine HCl (0.1 mg/kg, IM). Then the animal was locally anaesthetised with 2% lignocaine HCl at the lumbosacral epidural space (2.5ml) and line infiltration at the surgical site. Animals were placed in right lateral recumbency. The left side of the abdomen near the rudimentary teat area was cleanly shaved and scrubbed with antiseptic solution. After scrubbing, an incision was made nearly anterior to the rudimentary teat; the bladder was located after separating subcutaneous tissue and muscles by blunt incision (Figure:1) The status of the bladder was intact, and the appearance of the bladder was a bulge.

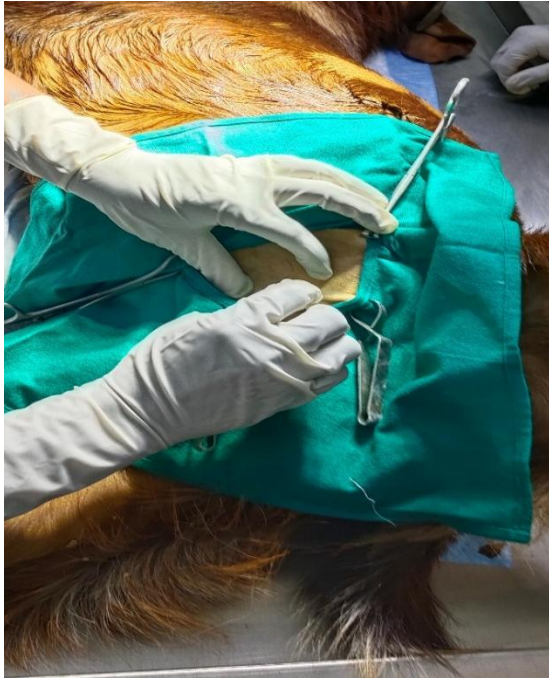


Fig 1: Blunt incision in the bladder



Fig 2: Tunnel formation



Fig 3: Foley catheter was passed



Fig 4: Foley's catheter was sutured at multiple sites on the ventral abdomen

A subcutaneous tunnel was made parallel to the prepuce by passing straight mosquito forceps through the subcutaneous tissue at the end of the skin, which was incised, to accommodate the catheter outlet (Figure-2). A Foley catheter was passed from outside the abdomen into the abdominal cavity, where the catheter tip was held on a stylet and directly inserted into the bladder; its bulb was inflated with sterile normal saline for fixation (Figure-3). Muscles and subcutaneous tissue were sutured with No.1 catgut in a continuous suture pattern. Skin was sutured with horizontal mattress with nylon No. 1. The Foley's catheter was sutured at multiple sites on the ventral abdomen (Figure-4). The Incision site was finally scrubbed with a diluted iodine solution. Postoperatively, the buck was administered Antibiotics (Tetracycline@ 10mg/kg b. wt) and Meloxicam for pain management. Orally, Ammonium chloride was given. After 10 days' catheter was removed. The animal recovered successfully, showing no postoperative complications after 10 days.

DISCUSSION

The incidence of urolithiasis is higher in male animals than in female animals. This may be due to anatomical confirmatory changes in the urethra (ThilagarS *et al.*, 1996). Seasonal variation may be a causative factor because urolithiasis occurs more frequently in both winter and summer. This may be related to the animal's water balance; during the winter, the animal will not take in much water and produce concentrated urine. (Radostitis *et al.*, 2000, Ewoldt *et al.*, 2000)

The prevalence of urolithiasis may occur due to an imbalance of mineral intake in the feed. A lot of animals, while fattening/growing, received more cereals and concentrated feeds. These feeds contain a higher level of phosphorus and magnesium and a relatively lower level of calcium and potassium predisposed to this condition. (UnmackA, 2000)

The most promising treatment for obstructive urolithiasis in small ruminants meant for breeding is surgical tube cystostomy. In successful circumstances, the very straightforward surgery restores full urethral patency and only requires a brief period of anaesthesia (Fortier *et al.*, 2004). The free flow of urine through the external urethral orifice could be due to many factors. Such as by giving anti-inflammatory drugs relived the spasm and inflammation of the urethra, calculolytic agent like Ammonium chloride and sodium chloride along with water reduced pH of urine and it promotes the dissolution of calculi, bypassing of urine through Foleys catheter may reduce the calculi size and frequent occlusion of catheter with clamp could bring urethral patency by flushing urethra of all debris and calculus material. (Ewoldt JM *et al.*, 2006) Complications of tube cystostomy might be due to blockade of the tube with blood or tissue debris, urethral rupture, tube dislodgement, and infection (Parrah JD *et al.*, 2010).

CONCLUSION

In summary, our findings indicated that tube cystostomy is a quick, practicable, field-applicable, and reliable method for the

management of obstructive urolithiasis in ruminants. Surgical management, along with medical management, provided better treatment options for obstructive urolithiasis and prophylactic measures may be advised to the owner.

REFERENCES

1. Bailey CB. Silica metabolism and silica urolithiasis in ruminants: a review. *Can J Anim Sci.* 1981; 61:219-235.
2. Elliot JS, Quaide WL, Sharp RF, et al. Mineralogical studies of urine: the relationship of apatite, brushite and struvite to urinary pH. *J Urol.* 1985;80(4):269.
3. Ewoldt JM, Anderson DE, Miesner MD, Saville WJ. Short- and long-term outcome and factors predicting survival after surgical tube cystostomy for treatment of obstructive urolithiasis in small ruminants. *Vet Surg.* 2006; 35:417-422.
4. Ewoldt JM, Jones ML, Miesner MD. Surgery of obstructive urolithiasis in ruminants. *Vet Clin North Am Food Anim Pract.* 2008; 24:455-465.
5. Fazili MR, Bhattacharyya HK, Buchoo BA, Malik HU, Dar SH. Management of obstructive urolithiasis in dairy calves with intact bladder and urethra by Fazili's minimally invasive tube cystostomy technique. *Vet Sci Dev.* 2012; 2:50-53.
6. Floyd JG Jr. Urolithiasis in food animals. In: Howard JL, Smith RA, editors. *Current veterinary therapy 4: food animal practice.* Philadelphia: Saunders; 1999. p.621-624.
7. Fortier LA, Gregg AJ, Erb HN, Fubini SC. Caprine obstructive urolithiasis: requirement for surgical intervention and mortality after percutaneous tube cystostomy, surgical tube cystostomy, or urinary bladder marsupialization. *Vet Surg.* 2004; 33:661-667.
8. Hay L. Prevention and treatment of urolithiasis in sheep. *Vet Rec.* 1991;12(Suppl):87-91.
9. Hoar DW, Emerick RJ, Embry LB. Potassium, phosphorus and calcium interrelationships influencing feedlot performance and phosphatic urolithiasis in lambs. *J Anim Sci.* 1970;30(4):597-600.
10. Jensen R, Mackey D. Urinary calculosis. In: Jensen R, Mackey D, editors. *Diseases of feedlot cattle.* 3rd ed. Philadelphia: Lea and Febiger; 1979. p.262-267.
11. Manning RA, Blaney BJ. Epidemiological aspects of urolithiasis in domestic animals in Queensland. *Aust Vet J.* 1986; 63:423-424.
12. McIntosh GH. Urolithiasis in animals. *Aust Vet J.* 1978; 54:267-271.
13. Oehme FW, Tillmann H. Diagnosis and treatment of ruminant urolithiasis. *J Am Vet Med Assoc.* 1965; 147:1331-1339.
14. Osborne CA, Polzin DJ, Abdullahi SU, et al. Struvite urolithiasis in animals and man: formation, detection and dissolution. *Adv Vet Sci Comp Med.* 1985; 29:1-45.
15. Parrah JD, Moulvi BA, Hussain SS, Bilal S, Ridwana. Comparative efficacy of tube cystostomy and cystostomy with indwelling urethral catheterization in the management of obstructive urolithiasis in bovines. 2010.

16. Pugh DG. Lower urinary tract problems. In: Pugh DG, editor. Sheep and goat medicine. 1st ed. Philadelphia: Saunders; 2002. p.267-276.
17. Radostitis OM, Blood DC, Gay CC, Hinchcliff KW. Veterinary medicine: a textbook of the diseases of cattle, sheep, pigs, goats and horses. London: Bailliere Tindall; 2000. p.493-498.
18. Thilagar S, Balasubramanian NN, Archibald D. A retrospective study of urinary obstruction in dogs: a radiographic study. Indian Vet J. 1996; 73:1183-1184.
19. Unmack A. Constituents of calculi from the urinary tract of bulls and bullocks: evidence of silica urolithiasis. Iskol-es Aarskrift. 1963:1-12.
20. VanMetre DC, Divers TJ. Diseases of the renal system: urolithiasis. In: Smith BP, editor. Large animal internal medicine. 3rd ed. St. Louis (MO): Mosby; 2002. p.853-860.

Creative Commons License

This article is an open-access article distributed under the terms and conditions of the Creative Commons Attribution–Non-commercial–No Derivatives 4.0 International (CC BY-NC-ND 4.0) License. This license permits users to copy and redistribute the material in any medium or format for non-commercial purposes only, provided that appropriate credit is given to the original author(s) and the source. No modifications, adaptations, or derivative works are permitted.

About the Corresponding Author

Samsamul Hoque is an Assistant Professor in the Department of Veterinary Surgery and Radiology at JIS College of Veterinary and Animal Sciences (JISCOVAS), Mogra, Hooghly, West Bengal, India. His academic interests include veterinary surgery, diagnostic imaging, animal healthcare, and clinical veterinary practice. He is actively involved in teaching, research, and academic activities.