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Madhu DN
Assistant Professor (OPG),
Department of TVCC,
Veterinary College Hebbal,
Bengaluru, Karnataka, India

Sandeep
Post graduation Student,
Department of Medicine
Veterinary, College Hebbal,
Bengaluru, Karnataka, India

Anil Kumar MC
Professor and Head, Department
of TVCC, Veterinary College
Hebbal, Bengaluru, Karnataka,
India

Tube cystostomy for the treatment of ruptured urinary bladder due to obstructive urolithiasis in a male Jamunapari goat: Case report

Madhu DN, Sandeep and Anil Kumar MC

Abstract

A male Jamunapari goat was presented with a history of obstructive urolithiasis. Surgical management by percutaneous tube cystostomy was performed under epidural anesthesia. The post operative care included daily dressing of the wound with 0.5% povidone iodine solution till healing, amoxicillin-cloxacillin antibiotic combination (500 mg, i.m) for 5 days and meloxicam (0.25 mg/Kg, i.m) for 3 days and Tab. Ammonium chloride (500 mg/kg) for 15 days. Foley's catheter was removed by 15th post operative day and the Jamunapari goat recovered uneventfully.

Keywords: Jamunapari goat, obstructive urolithiasis; tube cystostomy, foley's catheter, ammonium chloride

Introduction

Urolithiasis is the formation of urolith anywhere in the urinary tract but most frequently at the distal end of sigmoid flexure in ruminants, and causes obstruction to urine flow leading to urine retention (Kushwaha *et al.*, 2011) [2]. In most cases, the urethra or bladder ruptures within 72 hours of the blockage and, if left untreated, the animal can die in four to five days. In caprine, clinical signs of urinary retention appear within 24 hours of complete urethral obstruction. A clinical sign varies depending on the duration of obstruction, the site of obstruction, and whether a rupture has occurred with the treatment being primarily surgical (Janke, 2009; Larson, 1996) [1, 3]. The present case report describes a case of ruptured urinary bladder due to obstructive urolithiasis in a Jamunapari goat and its successful management by tube cystostomy. Clinical symptoms of urinary stones include restlessness and anxiety. Tail wagging is an early sign. There may be excessive noise and animals make frequent and vigorous efforts to urinate. Significant abdominal pressure can cause some degree of rectal prolapse. Inexperienced owners may assume that their goats are constipated and treat the goats inappropriately instead of consulting a veterinarian. Bloody urine drops and (or) crystals can be seen in the hair of the foreskin. Goats with partial obstruction may pass small, intermittent streams of urine.

The reasons behind the occurrence of urinary calculi in goats

Urinary calculi formation in goats is influenced by numerous predisposing factors

- Early castration in goats leads to decrease the diameter of ureter, hence there is a more chance of formation of urinary calculi and suitable age of castration that will avoid chances of calculi formation is 5 or 6 month.
- When goats drink less amount of water are more prone to urinary calculi formation compare to normal water intake goats because there is a concentration of urine will be there hence leads to calculi formation.
- If the goats consume excessive phosphorous rich diets (ex: grains and their based feed) are more prone to calculi formation because phosphorous is the main mineral required for calculi formation.
- The subject of breeding. Pygmy goats, being small in size, are particularly susceptible to this condition because of their smaller ureters. It is advisable to steer clear of diets that are primarily grain-based when it comes to pygmy goats. Additionally, it is important to refrain from providing them with treats that are high in grains.
- The calcium and phosphorus ratio in the diet should be around 2:1 to avoid unnecessary stone formation.

Corresponding Author:
Madhu DN
Assistant Professor (OPG),
Department of TVCC,
Veterinary College Hebbal,
Bengaluru, Karnataka, India

Providing food containing a urine acidifier such as ammonium chloride can help prevent stone formation. Then neutering, plenty of water and salt, good nutrition and exercise are all good treatments. This condition is seen much more often in confined goats consuming high energy diets than in pastured goats eating large amounts of feed and getting lots of exercise.

Case History and Observations

A 8 month male Jamunapari goat was presented with the history of anorexia, anuria, dysuria and bilateral abdominal distention since 2 days. Upon clinical examination the values for heart and respiratory rate and rectal temperature of the subject were within the expected range. Upon Physical examination fluid thrill upon ballottement and abdominocentesis revealed urine in the abdominal cavity suggesting rupture of urinary bladder without rupture of urethra. It was decided to perform tube cystostomy using Foley's catheter. Based on the history and clinical findings, the case was diagnosed as complete urinary obstruction with rupture of urinary bladder and it was decided to perform surgical correction.

Surgical treatment

The animal was placed in right lateral recumbency and given 2% lignocaine at lumbrosacral region for epidural analgesia. Aseptic surgery was performed on the left side of the abdomen, close to the primitive teat. A linear incision measuring 3 cm was made on the skin in front of the underdeveloped teat. After making incisions in the skin, fascia, muscles, and peritoneum, urine drainage was done and ruptured part of urinary bladder was identified. Cystorrhaphy was performed with Lembert's suture pattern using 2/0 catgut. The Foleys catheter was inserted into a subcutaneous tunnel that ran parallel to the prepuce and was pointed toward the incision. A Foley's catheter was inserted through the tunnel, and with the aid of a k-wire fixed in the catheter's eye, it was stabbed directly into an avascular area of the bladder. To keep the catheter from coming loose from the bladder, the balloon was inflated with 10 milliliters of normal saline, and the k-wire was carefully removed. Additionally, the skin, muscles, and peritoneum were regularly closed, and Foley's catheter was fastened to the ventral abdomen in a number of locations using straightforward, interrupted silk sutures. (Fig. 1).

The patient's postoperative care entailed the daily application of a 0.5% povidone iodine solution for wound dressing until complete healing, amoxicillin-cloxacillin antibiotic combination (500 mg, i.m) for 5 days and meloxicam (0.25 mg/Kg, i.m) for 3 days and Tab. Ammonium chloride (500 mg/kg) for 15 days. The owner was It was advised to flush the Foley's catheter every two hours during the initial three days. Following that, it was recommended to keep it closed for an additional two hours after flushing until the animal urinated through the external urethral orifice. Dribbling of urine from urethra was seen from 12th post operative day onwards and the obstruction was relieved completely by 15th post operative day and therefore Foley's catheter was removed (Fig. 2). The recurrence was not seen during the subsequent period of 4 months post surgery (Fig. 3).

Materials and Methods

Ethics approval: Ethics approval was not required. All clinical cases in this study were treated and investigated according to standard clinical and research procedures.

Animal: The present study was conducted at TVCC department veterinary college hebbal, Bengaluru. This formed material of the study.

Method: We followed the surgical intervention as explained in the surgical treatment with procedure.

Results and Discussion

There are several surgical treatments available for this condition, including urethrostomy (Stone *et al.*, 1997) [6], tube cystostomy (Williams and White, 1991) [7], bladder marsupialization (May *et al.*, 1998) [4], penile catheterization, and amputation, are available for treating obstructive urolithiasis. (Winter *et al.*, 1987) [8] but each procedure is having their own advantages and disadvantages. Tube cystostomy along with medical dissolution of calculi which was done in the present case is an effective technique for resolution of obstructive urolithiasis is in line with the earlier findings (Sangeetha *et al.*, 2015) [5].

The urethral diameter and the strength of the urethralis muscle are controlled by testosterone hormone in young animals. It is not anticipated that younger animals will develop the urethral muscle properly in the same way as adult animals would. Precipitation and crystallization of minerals in urine is caused by decreased availability of milk, reduced water intake during the winter, and of phosphorus-rich rice bran and wheat bran. This causes the creation of uroliths, which can impede the urethra's narrowest channel, the region of sigmoid flexure of the glans penis, and cause obstructive urolithiasis. The age of the Jamunapari goat in the present case was 8 months old male Jamunapari goat had the history of reduced intake of water during winter were the two potential causes of the obstructive urolithiasis.

Based on the findings in this case report, it can be determined that animals with obstructive urolithiasis who undergo surgical management for a ruptured urinary bladder have a positive prognosis with tube cystostomy.

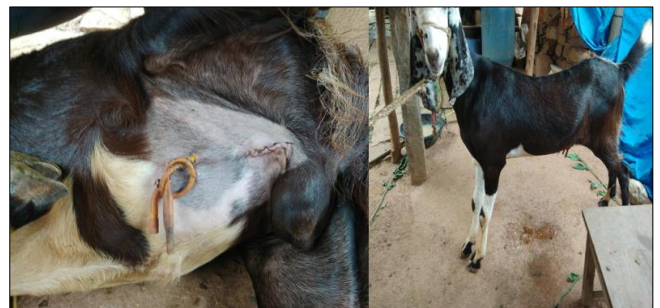


Fig 1: Post operative photographs just after surgery

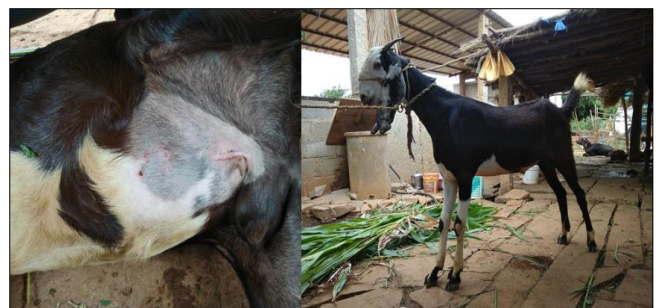


Fig 2: 15th day post operative photographs of the same animal



Fig 3: Post operative photographs of the same animal after 2 months

Conclusion

By following these procedures i.e Tube cystotomy and with good post-operative care animal recovered uneventfully within 15 days of the treatment

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