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Management of obstructive urolithiasis in a bullock by urethrotomy

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Abstract

Urinary tract obstruction is a common secondary complication in ruminants with urolithiasis. Such a condition is considered as a medical emergency and should be managed effectively to prevent the mortality associated with it. A five-year-old non-descript bullock was presented with history of difficulty in passing urine since few days. It was tentatively diagnosed as a case of urethral obstruction secondary to urolithiasis and was decided to perform urethrotomy since tube cystostomy failed to relieve the urethral obstruction. Local anesthesia was performed by local infiltration at site. Pre-scrotal urethrotomy was performed. Following incision at the obstruction site after locating through catheter guidance, urolith was removed. The incision was closed after confirming the patency of urethra by passing urinary catheter both side of incision site in retrograde or normograde way. Post operatively the animal was treated with antibiotics and anti-inflammatory drugs. Suture was removed at the 10th post-operative day and the animal made an uneventful recovery.

Keywords: Tube cystostomy, urethrotomy, urolithiasis, bullock, urethral obstruction

Introduction

Urolithiasis is common in ruminants which results in secondary obstruction of urinary tract. Hence obstruction due to urolithiasis should be considered as an emergency and should be managed immediately to prevent mortality associated with it. Makhdoomi and Gazi (2013) [5] reported incidence of 5.04% among the animals in India which suffered obstructive urolithiasis. Among them, most commonly affected species was found to be the goats followed by cattle. Rupture of urinary bladder is a common sequelae in cases of complete obstruction of urethra due to urolithiasis. This is manifested as severe abdominal distention due to uroabdomen (Kumar *et al.*, 1992) [2]. Due to the anatomical peculiarity of urinary tract, urolithiasis is a severe problem in case of male animals (Larson, 1996) [4]. Stone *et al.*, (1997) [10] reported that urethral obstruction is commonly seen in castrated male animal. He also recommended perineal urethrostomy technique for the management of urethral obstruction in ruminants if the animals are not intended for breeding purpose. Since urethrostomy has disadvantages like urine scald formation and it can also cause post-operative stricture formation (Sedeek and Bakr, 2009) [8].

The present paper describes about the surgical management of obstructive urolithiasis in a bullock using urethrotomy when tube cystostomy failed to manage the condition due to the large size of urolith involved in the obstruction.

Case history

A five-year-old non-descript bullock was presented to Referral Veterinary Polyclinic, Indian Veterinary Research Institute, Izatnagar with history of difficulty in passing urine for the past one month. The animal was previously treated by doing emergency tube cystostomy through ischio-rectal fossa, but failed to make the urethra patent even after two weeks. It was suspected that a large urolith was blocking the urethra.

Clinical examination

The animal was found to be dull and depressed with elevated temperature and respiration rate. When the cystostomy tube was blocked temporarily by tying, it was found that animal strained too much since no urine passed through the normal opening. Per-rectal examination revealed presence of distended urinary bladder. External digital palpation of urethra was tried to locate the site of obstruction but failed to identify any urolith through palpation. Rigid urinary catheter was then passed to identify the site of obstruction. Even with continues effort (Retropropulsion) to pass the catheter, it was not passing beyond a particular length indicating

the presence of urethral obstruction. Hence the condition was tentatively diagnosed as urethral obstruction due to urolithiasis and was decided to perform urethrotomy to remove the urethroliths obstructing the urinary tract.

Surgical procedure

Following the unsuccessful attempt to push the urethrolith back into the bladder by performing retro-hydro propulsion. It was decided to perform urethrotomy to retrieve the lodged calculi causing obstruction. Anesthesia was achieved through local infiltration at site using lignocaine hydrochloride 2% after restraining the animal in right lateral recumbancy. The pre-scrotal surgical site was prepared aseptically for the surgery. The urinary calculi responsible for urethral obstruction was located by passing urinary catheter which was made rigid using metallic wire. The catheter was passed until it was blocked by the urolith. The length of catheter passed was measured. This length was used to identify the correct site of urethrotomy for relieving the urethrolith. The skin above the proposed site was incised following which the urethra was identified. The urethrolith was palpable from outside the urethra. A nick incision was put and the calculi was removed. For identification of any further obstruction in urethra, the catheter was passed till the bladder from the site of urethrotomy. After complete passing of urinary catheter urine started to flow through the catheter indicating a patent urethra. The urinary catheter was then passed in retrograde manner through incision site to come out through natural urethral orifice. The urethral incision was closed in double layer suture pattern using vicryl 2-0 which was followed by subcutaneous suture. The skin was closed by cross mattress pattern using polyamide No.1 suture material. The owner was advised to keep the urethral catheter in place atleast for five post-operative days.

Post-operatively animal was treated with Streptopenicillin 2.5g intramuscularly twice daily for five days along with meloxicam at the dose rate of 0.5 mg/kg body weight intramuscularly for three days. Daily antiseptic dressing with iodine ointment was advised. Foley catheter at the tube cystostomy site was advised to keep for atleast one month to prevent any recurrent obstruction/complications. Suture was removed at the 10th post-operative day and the animal recovered uneventfully without complications.



Fig 1: Positioning the animal in lateral recumbancy to facilitate urethrotomy by pre-scrotal approach



Fig 2: The site of urethral obstruction was incised following its identification by passing urinary catheter



Fig 3: The urinary catheter was passed into the bladder through the urethral incision for identification of any further blockage



Fig 4: The single big urolith that caused obstruction in the urethra



Fig 5: Post-operative image showing urine flow through urinary catheter

Discussion

The common type of calculi obtained from bovine urolithiasis was found to be magnesium ammonium phosphate, calcium phosphate, calcium carbonate, calcium oxalate, hippuric acid, tyrosine and uric acid, Among, those the most common was found to be magnesium ammonium phosphate (Parrah *et al.*, 2010) [6]. The composition of urinary calculi depends on multiple factors. It is mostly dependant on the dietary composition of different elements, geographical peculiarity and the managerial practices (Singh and Singh, 1990) [9]. Rupture of bladder and urethra are the two commonly seen sequelae of urinary obstruction (Rafee *et al.*, 2015) [7]. Kushwaha, (2007) [3] evaluated techniques like tube cystostomy, urethrotomy and medical dissolution as the treatment for managing obstructive urolithiasis in buffalo calves and found that the most preferred technique used was tube cystostomy. In present case, urethrotomy was done since tube cystostomy failed to manage the obstruction in the bullock may be due to the large size of urolith that has lodged in the urethra. Dietary mineral supplementation was also required essentially for maintaining the calcium-phosphorus balance in the animal body (Kalim *et al.*, 2011) [1]. The owner was advised to add salt in feed to facilitate increased water intake of the bullock which helps in calculi flushing.

The paper describes about the successful management of urethral obstruction secondary to urolithiasis in a bullock by pre-scrotal urethrotomy technique.

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