Bangladesh Journal of Veterinary and Animal Sciences
Journal home page: www.bjvas.com
pISSN 2227-6416
eISSN 2709-2542

Short communication

Surgical correction of penile urethral diverticulum in a Jamunapari crossbred kid: A clinical case report

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A R T I C L E I N F O

Article history:

Received: 10/01/2023
Accepted: 19/06/2023

Keywords:

Prepuse, penile, diverticulum, Jamunapari, PSTU

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A B S T R A C T

Small ruminants extremely seldom have congenital urinary system anomalies. However, a variety of defects, including urethral diverticulum, have been documented elsewhere. A five-days old male black bangle-Jamunapari cross-bred kid with about 4 kg body weight was brought to Veterinary Teaching Hospital, Faculty of Animal Sciences and Veterinary Medicine, Patuakhali Science and Technology University, Barishal Campus, Babuganj, Barishal-8210, Bangladesh. The kid suffered from stranguria and dysuria and a sac-like structure were present in front of the testis. After examination, it was diagnosed as penile urethral diverticulum. A standard surgical procedure was used and the extra part of the penile urethra was excised. A broad-spectrum antibiotic, analgesic and antihistaminic were used for 5 days. Skin sutures were removed after 10 days of surgery. Postoperative follow-up for 15 days showed a healthy kid without any complications.

To cite this paper: *D. Biswas, 2023. Surgical correction of penile urethral diverticulum in a Jamunapari cross-bred kid- a clinical case report. Bangladesh Journal of Veterinary and Animal Sciences, 11(1):57-61.*

1. INTRODUCTION

Congenital abnormalities present at birth result from errors arising during the early developmental process either genetic or environmental or a combination of both. The frequency of individual congenital defects varies according to breed, sex, geographical area, year, food, habit and level of nutrition. Incidence of congenital defects in caprine is about 36.4% in Nigeria (Sonfada et al., 2010) were reported. The most common defects are limbs contracted, craniofacial defects, post-natal defects, patent urachus, hypospadias, renal agenesis and abnormal twinning (Temizosylu et al., 2005; Sonfada et al., 2010). A congenital defect in the urinary system in ruminants is uncommon, but the urethral diverticulum in a different breed of goats is reported (Sakhaee and Azari, 2009; Omidi et al., 2011) elsewhere. However, this condition is a congenital or acquired condition in which a variable-sized "pocket" or out-pouching occurs close to the urethra (Karras et al., 1992; Anderson et al., 1993). Very commonly, this urethral diverticulum is observed at the pre/or post-scrotal region, which develops as a result of a temporary occlusion of the urethra or, a pouch-like structure where the urine is stasis for several hours, as a result of bacterial urethritis is common of the lower urinary tract (Gasthuys et al., 1993). The majority of congenital malformations have no specific etiology, but some are brought on by environmental or genetic factors, or a combination of both. There were several methods used to diagnose this urethral diverticulum including fluoroscopy and ultrasonography. However, surgical resection of this diverticulum is the one of main treatments

for correction (Vogel et al., 2011; Belge et al., 2022). Scientific reports on caprine congenital urethral diverticulum are not frequent in Bangladesh. The present study reported a successful surgical management of the penile urethral diverticulum in a cross-breed kid.

2. CASE PRESENTATION

A 5-day-old, male, cross-bred kid (Black Bengal × Jamunapari) was referred to the Veterinary Teaching Hospital, Faculty of Animal Sciences and Veterinary Medicine, Patuakhali Science and Technology University, Barishal Campus, Babuganj, Barishal-8210, Bangladesh, from nearby Ujirpur upazilla, Barishal. After born the kid had poor suckling reflex and frequently vocalization, stretched and tried to urinate but only dribbled. The owners also found a sac-like structure in front of the prepuce (Figure 1). On clinical examination, it was revealed that the kid was depressed, had tachycardia (122 beats/min) and hyperpnea (40 beats/min), and also had normal rectal temperature (37.80C). There was little inflammation on the preputial orifice at this time with bad smell. Therefore, to relieve this kid from continuous irritation by stagnant urine, the surgical approach was the best treatment for this anomaly. However, the urethral process was firmly attached to the glans penis and each testis was situated beside the penis but there were no visible abnormalities of others.

3. SURGICAL PROCEDURE

The surgical area was clipped and shaved properly. The area was washed 2 times with soap. The kid was placed in a dorso-ventral position on the operation table. A local anaesthetic agent, 2% lignocaine HCl (Jasocaine®, Jason Pharmaceutical Limited, Bangladesh) was used for regional analgesia. Five ml of 2% lignocaine HCl was injected subcutaneously around the penile-urethral diverticulum. The area was painted with 10% povidone iodine (Povisep®, Jason Pharmaceutical Limited, Bangladesh) 3 times. A window towel was applied over the surgical area. The urethral opening was controlled to prevent contamination. A longitudinal midline skin incision was made on the penile-urethral diverticulum and the skin was separated by blunt dissection. The wall of the penile diverticulum was identified and separated from the skin. The tubal opening was confirmed by introducing a nylon passing through the diverticulum opening (Figure 2). The enlarged part of this layer was excised and the opening was closed by catgut 1-0 through the c-zerny suture technique (Figure 3). Cutting edges of the skin were closed by a horizontal mattress suture (Figure 4) with braided silk. The incision site was protected by povidone iodine-soaked gauze.

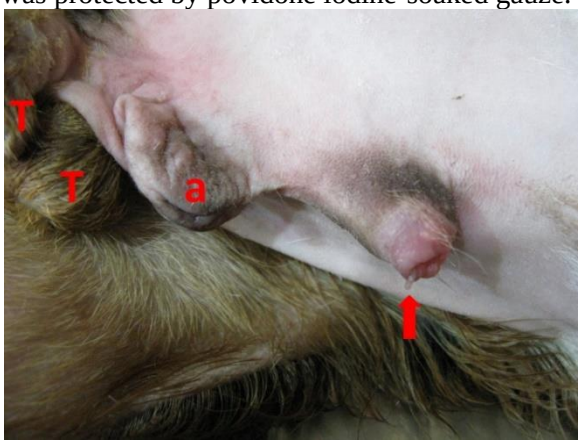

Figure 1. Figure showing (a) congenital penile-urethral diverticulum, two different testicle (T) and urethral process (arrow)

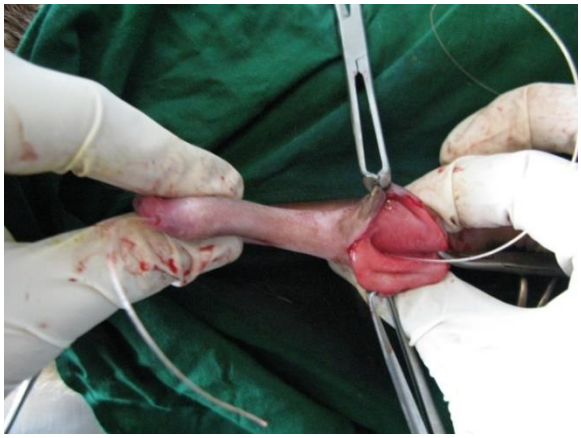
Figure 2. Confirmation of urethral opening with nylon passing through diverticulum opening

4. POST-OPERATIVE CARE AND FOLLOW-UP

After the operation, an antibiotic, gentamicin HCl (Inj. Genta-10®, Jason Pharmaceutical Limited, Bangladesh), was administered intramuscularly at a dose rate of 20 mg/kg for seven consecutive days. An analgesic and antihistaminic, meloxicam and pheniramine maleate (Inj. Mel-vet, 20 mg/ml, ACME Laboratories Ltd. Bangladesh and Inj. Antihista-vet, 22.75mg/ml, Square PharmaceuticalLtd,

Bangladesh, respectively), was injected intramuscularly at a dose rate of 0.5mg/kg and 0.4mg/kg body weight, respectively for five days. Skin sutures were removed after ten days of operation. The surgical wound healed without any difficulties, and the post-operative report highlighted that no negative clinical issues had materialized. A phone call was made to the owner after three months following the operation and it was discovered that the kid was urinating normally and that there were no unfavourable clinical or behavioural symptoms.

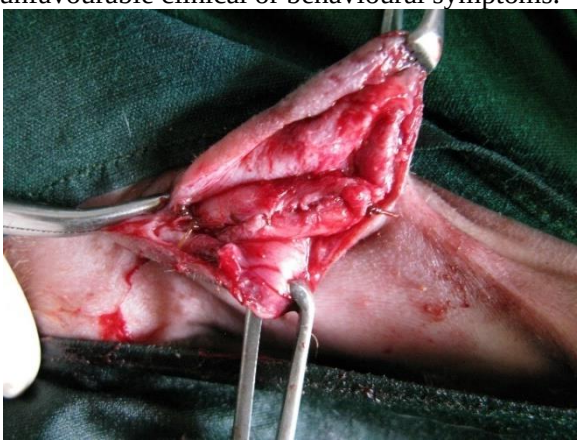

Figure 3. The excess portion of the urethral wall was removed, and tighter suturing with catgut was performed

Figure 4. Suturing of penile-diverticulum skin after removal of extra part of skin

5. DISCUSSION

The development of the external genitalia is greatly influenced by a variety of elements, including genetic reprogramming, cell differentiation, hormone signaling, enzyme activity, and tissue remodeling. This process can be disturbed by any inherent or external influences, which might result in developmental defects. The penile diverticulum was formed by an overgrowth of the ventral urethral layer close to the glans penis. This congenital defect was reported in different species including dogs (Atilla, 2022), cats (Yoon et al., 2017), calves (Vogel et al., 2011) and goats (Belge et al., 2022; Iqbal, 2019). Produced urine may continuously accumulate in the diverticulum and create phimosis in male kids. Upon studying the various case reports, it was discovered that Bangladesh has not yet published this type of report. However, in the present study, the penile urethral diverticulum was developed in front of the testis and on clinical examination it was found that a sac-like structure was developed on the ventral midline associated with prepuce and urine was stagnant for several hours. Genetic factors and progesterone hormone therapy may be hazardous during the first month of pregnancy. Alterations in the hormone receptors or altered testosterone production can also be to blame. To avoid or limit the occurrence of penile diverticulum and to clarify the molecular genetic pathways of morphogenesis, additional research on hormonal and molecular mechanisms of development may be required. The sac may be developed in pre-scrotal and post-scrotal positions in kids or sometimes in different shapes of this sac (Belge et al., 2022). This stasis in urine may invite some bacterial contamination and initiate bacterial urethritis. Therefore, excision of this diverticulum should be considered for preventing urethritis (Almubarak et al., 2016). In small ruminants, the urethral diverticulum was treated by excision or prophylactically. Such situations were treated by focusing on surgical treatment when it was an option. Otherwise, if an infection is resistant to conventional treatment, a penile excision is necessary. In the present study, this enlarged part was fluctuant and urine was stagnant in the sac. Several reports are indicating that local swelling in urethral dilatation has a fluctuant character (Temizosylu et al., 2005; Simon et al., 2010). Presently, the penile diverticulum was ovoid-shaped and situated ventrally at the pre-scrotal region. This finding was very similar to the previous report (Temizosylu, 2005; Omid et al., 2011). In the present study, a standard surgical technique was used and urethrectomy was done elsewhere (Anderson et al., 1993; Genccelep and Alkan,

2000). The cutting edge of the sac was sutured by catgut. The skin was closed by horizontal mattress suture techniques. Due to a long-term urine accumulation in the enlargement part of the urethra, the condition is typically associated with urethritis and/or cystitis. If the condition is also accompanied by aplasia of the penis, the urinary bladder may even rupture. Several researchers have suggested the excision of the excess part of the urethral layer for the treatment of penile diverticulum (Temizsoylu, 2005; Sedeek and Bakr, 2009). However, urethral penile diverticulum in goat kids can be combined with other defects such as hermaphrodism, cryptorchism and dilatation of vesica (King et al., 2002). In the present study, the scrotal sac was bifurcated and the testis was also small in size. It was not tested whether the testis is active or not. In this case, after the operation, the bulging of the urethral layers in the bottom of the diverticulum was relieved and urine passed through this lumen without any complications. The kid was in good health. As far as we know, this is the first instance of penile urethral diverticulum in a Bangladeshi cross-breed kid. It was recommended that surgical technique is the first choice of penile urethral diverticulum correction in a kid.

6. CONCLUSION

This report is an interesting congenital anomaly in a black bangle-Jamunapari cross-bred kid and was the first report in Bangladesh. The penile urethral diverticulum was successfully corrected by surgically using excision and urethrectomy methods.

ACKNOWLEDGEMENTS

The author was very grateful to the authority of Veterinary Teaching Hospital, PSTU and the animal owner who gave the information from time to time of the update on the present condition of the kid.

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