

Pratique Clinique et Investigation

Acute Paraphimosis in Bull and its Surgical Management

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ABSTRACT

Phimosis is the inability to retract the foreskin behind the head (glans) of the penis. A 5 years old local bull was presented to the Veterinary Teaching Hospital, Mekelle University with a history of anorexia, constant anuria, sustained penile protrusion due to injury by a herdsman, and admitted within few hours after injury. Clinical examination revealed acute edematous penile protrusion with redness and large swelling penis. After aseptic preparation of the surgical site, stabilizing the bull and locally desensitizing the incision area; the penis was repositioned into the preputial cavity and a purse string suture was applied as retention suture to prevent recurrence and adequate postoperative measures rewarded an early recovery. The present case report aims to provide a record of successful surgical correction and management of acute paraphimosis in a bull.

Keywords: *Acute; Balanoposthitis; Bull; Paraphimosis; Purse string sutures*

INTRODUCTION

Injuries to the reproductive tract are a frequent occurrence and carry the potential of ending the functional use of a bull. Elite breeding bulls of high genetic potential have always been of sufficient economic value to justify efforts at medical and surgical restoration. Paraphimosis is a medical emergency where the foreskin can't return to its normal location once retracted. It usually occurs after erection and the symptoms may include difficulty or pain during urination and painful erection [1]. It may be due to either the constriction of the penis behind the glans penis or swelling of the glans penis, making it impossible to draw the organ back through the naturally small preputial orifice [2].

Paraphimosis is the inability to completely retract the penis into the preputial cavity. There are three main causes and mechanisms for the pathogenesis of paraphimosis in bulls. The first cause is preputial edema that is caused due to penile injury, preputial trauma/lacerations, and/or diseases and results in ventral or generalized edema. Whereas damage to the penile innervation is also another etiology of paraphimosis caused due to spinal cord injury and/or a consequence of a penile laceration or hematoma. Thirdly, penile paralysis caused by paralysis of the penis, consequence of priapism, and/or use of acepromazine/phenothiazine tranquilizer is also another cause for paraphimosis [3-5].

Generally, trauma to the penis and prepuce, inflammation of the penis, neoplasia of the penis, inflammation of the prepuce, and infection of the prepuce are considered as the most common predisposing factors for paraphimosis in most domestic animals. Besides, the breed, excessive amounts of parietal preputial epithelium and absence or lack of development of the

Citation: Haben Fesseha, Acute Paraphimosis in Bull and its Surgical Management. *Prac Clin Invest* 3(2): 68-71.

caudal prepuce muscle are also the predisposing factors for paraphimosis [6] . Moreover, the general path physiology of the condition is either the constriction of the prepuce behind the glans penis or to swelling (inflammatory/edema) of the glans penis which results in the prevention of the organ being withdrawn back through the naturally small preputial orifice. These could be associated with different types of conditions such as traumatic injury, neoplasia, swelling of the prepuce, and penile paralysis [4,7,8].

Accordingly, a traumatic injury that is mostly associated with false copulation is caused when penis strikes the pelvis of the cow or the cow kicks the bull's penis which results in enlargement or swelling (inflammation/edema) of the distal penis, preventing the penis from being retracted back into the prepuce. Neoplasia (malignant or benign) of the penis is also another cause for paraphimosis which results in enlargement or swelling of the distal penis that prevents the penis from being retracted back into the prepuce. Swelling of the prepuce due to inflammatory, edema or infectious result in the narrowing of the preputial orifice therefore an inability to retract the penis into the prepuce. Neurogenic origin also, causing paralysis of the penis therefore an inability to retract the penis into the prepuce. This may be due to a spinal injury leading to paralysis of the retractor muscles [3,9] .

The time course of the paraphimosis depends on the underlying cause such as swelling of penis and prepuce occurs within a few hours of paraphimosis. Besides, with traumatic lesions, the resolution of the lesion with medical treatment is generally rapid if the condition is observed and treated promptly. However, if the condition is due to penile paralysis, the resolution may be protracted or even unlikely [2,5]. There are several methods used for treating paraphimosis and this involves reassuring the patient, reducing the preputial edema, and restoring the prepuce to its original position and condition. Ice packs, penile wraps, and manual compression mechanically disperse the penile and preputial edema, while osmotic agents, such as granulated sugar or mannitol have been reported as effective agents to reduce swelling [2,4,9]. Hence, the present case reports the successful surgical correction and management of an acute case of paraphimosis in a local bull

CASE PRESENTATION, CLINICAL EXAMINATION, AND ANIMAL HANDLING

A 5-year-old local breed bull with a good body condition was presented to the Veterinary Teaching Hospital of Mekelle University with a history of anorexia, constant bellowing, and sustained penile protrusion following traumatic injury by herdsman since approximately two hours on the date of admission. Besides, the owner also told us the condition occurs immediately after the herdsman severely injured the penis of the bull when it tries to mount a cow. Upon clinical presentations, the penis was red with large-sized swelling and out of its normal location. Besides, clinical examination revealed that the glans penis was swollen, hot, and fully soiled with dirt. Additionally, the bull was restrained both physically and chemically on lateral recumbency for detailed clinical examination and treatment.

For physical restraining, the bull was handled with rope-assisted by personnel to adequately restrain it in the ventrolateral position. Chemically, the bull was first sedated with Domidine® (Detomidine hydrochloride, manufactured by Dechra Veterinary Products Ltd., United Kingdom) with a dose of 20 µg/ kg intravenously. Also, local anesthesia of the preputial area was done using two percent lidocaine (Lidocaine hydrochloride 2%, Vedco Inc. Saint Joseph Missouri, USA) to desensitize the area and alleviate pain during the surgical procedure

SURGICAL CORRECTION

Following proper physical and chemical restraining and aseptic preparation of the surgical site (prepuce), correction of the protruded penis was performed after the bull was restrained in lateral recumbency. The hair surrounding the swelling (prepuce) was aseptically prepared by clipping, shaving, scrubbing, washing with water, and salvon® (Cetrimide 3% and Chlorhexidine gluconate 0.5% solution). The protruded penis was washed with saline solution to decrease the edema. Then, it was washed with a 2% KMnO₄ solution to remove the dirt, dung, and dust. After the edema was reduced, the glans penis repositioned into the preputial cavity, and retention suture was applied using purse-string sutures to the preputial orifice. Lastly, the area was properly cleaned and dressed with a 1% povidone-iodine solution and admitted home.

POST-OPERATIVE FOLLOW-UP AND RESULT

Postoperatively, the bull was kept on antibiotic penicillin (24mg/kg) and dihydrostreptomycin sulphate (30mg/kg) (PenStrep® Norbrook UK) intramuscularly for three days to reduce post-operative complication. Besides, Dexamethasone was also administered at a dose rate of 0.2 mg/kg for three days intramuscularly to reduce swelling of the glans penis. Purse string suture was removed on the 7th day and the bull was recovered uneventfully without any complications. Tetracycline wound spray was also applied around the wound.

DISCUSSION AND CONCLUSION

Paraphimosis is the failure to fully retract the penis into the preputial cavity. The principal goal in treating acute paraphimosis is to reduce the edema and reposition the prolapsed penis to the preputial cavity as soon as possible to protect it from further injuries [2]. Accordingly, in the current case report, the protruding penis was washed with both saline water and 2% KMnO₄ solution to minimize the edema and remove the dirt, dung, and dust, respectively. This is in line with the previous report of Nevi et al. [6], Ravikumar et al. [9], and Adeola and Enobong [3] that uses similar case handling procedure to manage the case in different domestic animals.

According to different findings, trauma to the penis during coitus is considered as the most common cause of paraphimosis. Besides, paraphimosis in bulls is also associated with penile injury, preputial trauma/lacerations and/or diseases, and damage to the penile innervation. This trauma to the penis results in loss of innervations of the penis leading to the paralysis of penile retractor muscles [2,3,6,9]. Similarly, in the present case, paraphimosis is caused due to the trauma.

In this case report, paraphimosis occurs in an adult bull. The occurrence of paraphimosis in this patient agrees with Nevi et al. [6], Ravikumar et al. [9], and Adeola and Enobong [3] where paraphimosis is most commonly seen in bulls and dogs and diagnosis is primarily determined by physical examination of the prepuce and penis at the time of presentation.

In the case present report, purse-string sutures were applied to manage acute paraphimosis in bull and the preputial orifice, and the penis was repositioned into the preputial cavity. This is in agreement with the report by Fossum [4] that a temporary purse-string is considered as one of the best options for surgical treatment of paraphimosis. Furthermore, an immediate attempt to correct paraphimosis has a great impact on the prognosis of the condition and further delay may result in adhesion, prolonged entrapment and strangulation that cause venous and lymphatic compromise that leads to penile necrosis [1-5]. Similarly, immediate action was taken to handle the case.

In the reported case, the paraphimosis was managed initially by reducing the swelling followed by retention in the preputial cavity by purse-string suture, antibiotic, and antiinflammatory was used to facilitate recovery and prevention of secondary bacterial infection. Postoperatively, the prepuce of the bull was applied with a 1% Povidone-iodine solution. The bull has recovered uneventfully without any complications. Similarly Kumaresan et al. [10] applied purse-string sutures for retention of the penis whereas Adeola and Enobong [3] used tension release incision with simple interrupted sutures for treatment of paraphimosis in dogs.

In conclusion, paraphimosis is a common phenomenon in most breeding farms that is caused due to trauma and can be easily diagnosed through history and clinical signs. The current case report discusses the successful management of acute paraphimosis in a local bull.

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