

“Nikko’s Penile Predicament”

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Introduction

Paraphimosis is defined as the inability to retract the penis into the preputial cavity, and it is often caused by preputial edema secondary to a traumatic event⁸. This can lead to ischemic necrosis of the penis if treatment is not administered in a timely manner⁸. Common causes of paraphimosis include trauma during breeding, administration of acepromazine, and significant weight loss⁸. Typically, stallions are more commonly affected because of the association with breeding⁸. Paraphimosis can occur in other species such as dogs and cats with dogs being more common¹¹. Overall, the prognosis is good if treatment is implemented rapidly.

History and Presentation

An approximately 17-year-old quarter horse stallion presented to Mississippi State University College of Veterinary Medicine (MSU-CVM) Equine Service for a swollen penis and sheath. He was purchased at a sale barn three days prior to presentation so a very limited history was obtained from his owner. Upon presentation, the stallion was bright, alert, and responsive. He weighed 900 lbs. with a body condition score (BCS) of a 3/9 with a 5/9 being ideal. His vital parameters were within normal limits with a heart rate of 36 beats per minute, a respiratory rate of 12 breaths per minute, and a temperature of 101 degrees Fahrenheit. His mucous membranes were pale and moist with a normal capillary refill time of less than two seconds. He had bilateral white nasal discharge with an intermittent cough. There was firm tissue surrounding the ventral aspect of his neck, which was potentially due to an old wound that was observed on the physical exam. Upon cardiac auscultation, no murmurs or arrhythmias were appreciated. However, on auscultation of his lungs with the rebreathing bag, tracheal rattles and crackles were heard. Gastrointestinal motility was normal in all four quadrants, and he had slight digital pulses present

in all four limbs. Upon examination of his penis, there was significant edema, ulcerations, and crusts present. He appeared unable to retract his penis into the preputial cavity. The remainder of his physical exam was within normal limits.

Diagnostic Approach

Paraphimosis is diagnosed based on clinical signs from a physical exam¹¹. Therefore, limited diagnostics were performed related to his paraphimosis. However, radiographs were taken to evaluate his swollen neck, and pre-anesthetic bloodwork was completed. Common physical exam findings associated with paraphimosis include a swollen penis and prepuce, the inability to retract the penis into the sheath, or priapism⁸. Priapism is defined as a persistent erection without sexual excitement⁴.

After a thorough physical exam, blood was collected for a complete blood count (CBC) and a large animal chemistry profile (LAP). There were no significant findings from the LAP, but on the CBC, his fibrinogen was considerably elevated at 1,000 mg/dL (normal range is 100-500 mg/dL). Fibrinogen is often increased in horses due to inflammation⁶. On December 16th, two view soft tissue neck radiographs were taken to assess the swelling in his ventral neck region. From the radiographic findings, differentials for the swelling included edema, cellulitis, and hemorrhage.

Pathophysiology

There are many causes of paraphimosis with trauma during breeding being the most common^{1,7,9}. Other causes include administration of acepromazine, extreme weight loss, equine

herpes virus-1, rabies, dourine, and purpura hemorrhagica^{1,6,8}. It is also a common sequela to penile paralysis and priapism^{1,7,9}.

Paraphimosis occurs when the penis is prolapsed for an extended period, which leads to the impairment of venous and lymphatic drainage^{1,7,8}. This results in excessive edema that prevents the penis from being retracted into the preputial cavity^{1,7,8}. As the severity of the edema progresses, the preputial ring becomes constricted, and this leads to an increase in the weight of the penis causing it to become more pendulous^{1,7,8}. When the penile tissue is exposed to the environment, it is at risk of irritation and pressure necrosis^{1,7,8}. Eventually, the tissue will excoriate and can become infected leading to sloughing of the skin^{1,7,8}. In extreme cases, injury may occur to the internal pudendal nerve causing permanent prolapse or paralysis^{1,7,8}.

Treatment and Management

The main goals when treating paraphimosis is to reduce inflammation and edema as soon as possible to prevent further tissue damage⁸. Some treatment options include hydrotherapy, non-steroidal anti-inflammatory drugs (NSAIDs), and a topical antibiotic ointment⁹. If an infection is present, systemic antibiotics may also be warranted⁹. In less severe cases, medical management should be attempted prior to surgery. The use of a compressive bandage for ten to fifteen minutes may facilitate a decrease in edema so that manual retraction of the penis into the preputial cavity can occur⁷. If hematomas or abscesses are present, drainage may be helpful in the most dependent area⁷. It is important to clean the drainage site every day, and it should heal by second intention⁷. Phenylephrine HCl can be injected into the corpus cavernosum to cause temporary retraction of the penis into a more proximal position within the preputial cavity⁷. To prevent recurrence, a purse-string suture is positioned across the preputial ring for several days⁷. A

probang penile repulsion device can be used to maintain the penis in the most proximal location for longer time periods than other methods⁷. Materials needed to construct a probang device include a PVC pipe or endotracheal tube, roll cotton, white adhesive tape, Elastikon, and a pair of latex gloves⁹. To create the device, roll cotton is wrapped around one end of the tube and secured with white tape⁹. A glove is turned inside out, placed over the cotton, and held in place using tape⁹. The padded end is covered with nitrofurazone ointment⁹. The probang is inserted into the preputial orifice while the penis and internal preputial fold are manually held into the external prepuce⁹. Elastikon is used to secure the device to the ventral abdominal wall by wrapping it around the stallion⁹. In one case at Texas A&M University Veterinary Medical Teaching Hospital, a probang was effectively applied to a stallion for one week without any major complications⁷. In more severe cases or those that do not respond to medical management, a penile amputation is often indicated⁸.

A partial phallectomy is defined as the surgical removal of a portion of the penis. In ideal situations, a stallion should be castrated several weeks before a partial phallectomy is performed to aid in behavior modification^{1,10}. A penile amputation can be completed using the Scott's, Vinsot's, or William's technique^{1,3}. The Vinsot's technique is commonly used in cases where the patient is not capable of undergoing general anesthesia due to other medical conditions or if finances are a concern². It is important to monitor post-operatively for any signs of dehiscence from the urethrostomy site or ventral skin incision, infection, or if the swelling increases or does not improve drastically within a week. Other complications include hemorrhage, hematuria, cystitis, diarrhea, and urine-induced, contact dermatitis of the hindlimbs^{1,3,5}. It is imperative that the horse remain away from mares to prevent a possible erection from occurring. Typical recommendations include two weeks of stall rest, two weeks turned out in a small paddock, and a

return to normal turnout after the fourth week if no complications have arisen. Prognosis is good with early detection and prompt treatment.

To facilitate examination, the stallion was sedated with 0.5 mg/kg (2 mL) of Xylazine intravenously (IV). Due to the extent of edema, it was determined that hydrotherapy would be beneficial for several days prior to surgery to attempt to minimize the edema. Hydrotherapy consisted of cold hosing his penis for ten minutes once a day, and then a nitrofurazone antibacterial ointment was applied. A makeshift sling was created to support the weight of his penis to reduce the edema and inflammation. An intravenous catheter was placed in the right jugular vein for the administration of pre-operative medications and in anticipation of surgery. The stallion was treated with 7.4 mg/kg (30 mL) of Gentamicin IV every twenty-four hours, and he was given 30 mg/kg (1.5 scoops) of Uniprim powder (Sulfadiazine-Trimethoprim) in his grain every twelve hours. He was also started on 1.1 mg/kg (9 mL) of Flunixin meglumine IV every twenty-four hours, which was switched to every twelve hours after surgery. While in hospital, he was vaccinated for Eastern & Western encephalomyelitis, tetanus, West Nile virus, and rabies, and he was given Quest Plus, which is a dewormer and boticide.

Three days after presentation, the patient underwent a phallectomy using the William's technique and a closed castration. He was sedated with 250 mg of Xylazine and 5 mg of Butorphanol IV, and anesthetic induction was achieved with 1 g of Ketamine and 25 mg of Midazolam IV. He was placed in dorsal recumbency, and a urinary catheter was inserted prior to entering the surgical suite. Once in the surgical suite, his penis was fully extended, and a Penrose drain was tied around the circumference of the prepuce proximal to the site of incision to act as a tourniquet. A 4 to 5 cm. incision was made at the level of the preputial ring on the ventral aspect through the skin, fascia, bulbospongiosus muscle, and corpus spongiosum to the level of the

urethra. The exposed urethra was incised on midline, and the incised edges were apposed with the epithelial border of the skin incision with 2-0 Vicryl in a simple continuous pattern making sure that the tunica albuginea was incorporated. A Callicrate bander was used to place an elastic band distal to the site of the urethrostomy. The loop was tightened, the band was crimped, and the excess loop attached to the device was cut loose and removed. The portion of the penis distal to the latex band was removed using a wedge-shaped incision. The latex band serves as a source of continuous, maximal pressure on the stump of the penis to prevent hemorrhage from the corporeal tissue and the vasculature.

Post-operatively, he was monitored for any signs of urinary or fecal incontinence, pyrexia, pain, or inappetence. His surgical site was evaluated for signs of dehiscence, infection, and excessive swelling daily. He was taken on hand walks twice a day throughout the remainder of his stay.

Case Outcome

Overall, surgery and recovery were uneventful, and he was discharged on December 19th. He was sent home with instructions to keep him on stall rest for two weeks, then a small paddock turn out for two weeks, and a return to normal turnout after a month post-op if no complications had arisen. He was to continue the Uniprim powder for ten days and the Flunixin meglumine orally every twelve hours for the next four days then switch to every twenty-four hours for three days. His owners were told that the latex band and tissue distal to the band should detach within three to four weeks. At home, he was kept on stall rest and light turn out with another gelding for four months while he recovered from surgery and began putting on more weight. In mid-March, he was turned out with a mixed group of horses and has been doing well ever since.

References

1. Arnold CE. Surgical conditions of the male equine reproductive tract, in Proceedings. *DVM 360* 2008 Sept. 30.
2. Arnold CE, Brinsko SP, Love CC, et al. Use of a modified Vinsot technique for partial phallectomy in 11 standing horses. *J Am Vet Med* 2010 July 1; 237(1):82-86.
3. Caruso M, Schumacher J. Standing Equine Penile Amputation, in Proceedings. *Veterinary Partners Appreciation Conference (V-PAC)* 2014 July 12.
4. Davidson AP. Paraphimosis in Dogs and Cats. *Merck Veterinary Manual*.
5. Doles J, Williams JW, Yarbrough TB. Penile Amputation and Sheath Ablation in the Horse. *Vet Surg* July 2001; 30:327-331.
6. eClinPath website. *Fibrinogen*. Available at: <https://eclinpath.com/hemostasis/tests/fibrinogen/>. Accessed June 2, 2021.
7. Hayden SS. Treating Equine Paraphimosis. *Compend Contin Educ Vet* 2012 Sept; 34(9):E1-E5.
8. Johnson AK, Samper JC. Paraphimosis. In: Wilson DA, eds. *Clinical Veterinary Advisor: The Horse*. Saunders Elsevier, 2012; 427-428.
9. Koch C, Livesey MA, O'Brien T. How to Construct and Apply a Penile Repulsion Device (Probang) to Manage Paraphimosis, in Proceedings. *AAEP Annual Convention-Las Vegas* 2009.
10. Rizk A, et al. Surgical Management of Penile and Preputial Neoplasms in Equine with Special Reference to Partial Phallectomy. *J Vet Med* 2013 Sept. 8; 1-8.
11. Rochat MC. Paraphimosis and Priapism. In: Hopper K, Silverstein DC, eds. *Small Animal Critical Care Medicine*. Saunders Elsevier, 2009; 615-618.