

PENILE AMPUTATION IN A DOG WITH SEVERE NECROTIC LESIONS DUE TO PARAPHIMOSIS - A SHORT CASE PRESENTATION

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Abstract

Paraphimosis is an emergency which represents the inability to retract the penis into the preputial sheath. Paraphimosis may be congenital resulting from preputial hypoplasia and small preputial orifice or could be acquired resulting from constriction of preputial orifice with hair, trauma, masturbation or coitus with persistent glans engorgement. The treatment goal is to reduce the dimensions of the glans, allowing it to be replaced into the sheath, before any severe damage appears. Poor management can lead to penile amputation due to ischemia, gangrenous necrosis, self-trauma with urethral lesions which impair urination. The study presents a severe case of paraphimosis, due to self-masturbation and preputial hair rings, with extensive necrotic lesions due to ischemia and self-mutilation lesions of a 2.8 years old Mioritic Shepard intact male. The severity of the vascular changes with irreversible damage of the penis and the extent of the self-mutilation injuries, required the scrotal urethrostomy and the amputation of the penis, with satisfactory results even if minor surgical complications were observed in the immediate postoperative period.

Key words: paraphimosis, penile amputation, penile trauma, dogs.

INTRODUCTION

Paraphimosis is defined as the inability to withdraw the penis into the sheath and is frequently found in young, intact males as a result of excessive sexual activity. Secondly, the withdrawal of the penis into the sheath can be prevented by low-manifestation abnormalities of the preputial orifice, dysfunctions of the preputial muscles or entanglement of the preputial hairs around the erect penis and circular compression followed by hemodynamic changes in it (Kustritz & Olson, 1999; Ritson et al., 2023).

The prognosis and therapeutic options in paraphimosis are dependent on the clinical symptoms, duration and severity of the course. In the early stages, penile tissue has a normal appearance and is painless. When circulatory changes are severe, changes in the colour of the glans and loss of sensation occur. As a rule, in this advanced stage, males lick and bite their glans exposed to the external environment, inducing self-mutilation lesions (Taylor & Smeak, 2021). Depending on the extent of the changes or induced self-mutilation trauma, partial or complete amputation of the penis

may be indicated. Complete amputation of the penis and foreskin can be combined with scrotal urethrostomy (Fossum, 2013; Coomer, 2013).

Knowing and understanding in detail the urethral and vascular anatomy of the dog's penis is very important for planning an intervention of this type.

The penis is structured in three distinct regions: the root of the penis, the body and the penile glans.

The urethra extends from the level of the ischial arch along the entire length of the three segments of the

of the penis and is surrounded by spongy tissue. At the level of the glans, the urethra adopts a ventral position, being housed in the urethral groove of the

penile bone and ends at the level of the external urethral orifice at the tip of the penis. The vascular supply of the penis is provided by three vascular branches that derive from the internal pudendal artery, namely the penile bulb artery, the deep penile artery and the superficial penile artery. The vascularization of the sheath derives from the superficial penile artery, the external pudendal artery and the

superficial epigastric artery. All these vascular branches anastomosis to each other so that special attention must be paid to haemostasis during surgery (Evans & Lahunta, 2013; Zamirbekova et al., 2024).

MATERIALS AND METHODS

At the University Emergency Hospital of the Faculty of Veterinary Medicine in Bucharest, a 2.8-year-old male of the Mioritic Shepherd breed was urgently presented with clinical manifestations of dysuria, bloody urination and lack of appetite. At the general clinical examination, the male was present, alert, body temperature 38.1 C, CRT 2 sec with mild tachypnoea and heart rate 150 bpm.

The penile glans was completely exposed, with extensive necrosis and specific self-mutilation lesions. It was not possible to identify the penile urethra for the purpose of the probe.



Figure 1. Paraphimosis with extensive necrotic lesions at the level of the penile glans

The blood investigations carried out did not reveal changes in the metabolic profile except for the level of urea (BUN) possibly associated with manifestations such as dysuria. The haematological examination identified a whole series of changes, in accordance with the type and severity of lesions of the external urogenital segment. Immediately after the general clinical examination, the patient was sedated with Dexmedetomidine 3 mcg/kg plus Methadone 0.2 mg/kg and Ketamine 2 mg/kg. Induction was performed with propofol at a dose of 2-3 mg/kg and maintenance throughout the surgery was performed with isoflurane.

The patient was placed in the supine position and the intervention area was prepared aseptically. The first surgical stage required the

performance of orchidectomy with ablation of the scrotal pouches and the urethrostomy at this level.

For this purpose, the elliptical incision of the skin around the scrotum was made, with the long axis oriented craniocaudally.

Haemostasis was ensured by forcepress or transfixic ligation with polydioxanone 3/0. Ligation of the testicular cords was performed circularly with polydioxanone 0 then the dissection of the subcutaneous tissues was continued until the complete removal of the scrotal pouches.



Figure 2. Paraphimosis with extensive necrotic lesions

The penile retractor muscle was carefully dissected and removed laterally from the ventral surface of the urethra. An incision was made in the ventral urethral wall which was later extended with scissors for a distance of 3.5-4 cm to ensure a sufficiently wide orifice. A suture pattern in separate stitches with 2/0 resorbable monofilament thread was used for the apposition of the urethral wall at the cutaneous edge, on each side of the stoma. A 2-way Foley catheter, CH 16 was inserted and secured into the bladder, attached to a urinary bag to provide closed urinary drainage throughout the intervention.

A second elliptical skin incision was made around the external genital segment, taking care that there was a distance of at least 1-2 cm

between the anterior edge of the urethrostomy and the caudal aspect of the penile amputation area. Particular attention was paid to the identification and ligation of the superficial epigastric branches, with polydioxanone 3/0, then the penis continued to be separated from the ventral abdominal wall in a caudal direction to the base of the penile bulbs. A circular ligation was made in an optimal region for amputation behind the base of the penile bone with polyglycolic acid (Vicryl) 0 to control any bleeding from the dorsal artery of the penis. After sectioning, the penile abutment was evaluated for the presence of haemorrhages and was allowed to retract caudally between the connective tissues. The subcutaneous connective tissue was approached by a continuous suture pattern with resorbable monoflation thread and the skin was closed with non-resorbable thread (Nylon) no. 0, at separate points.

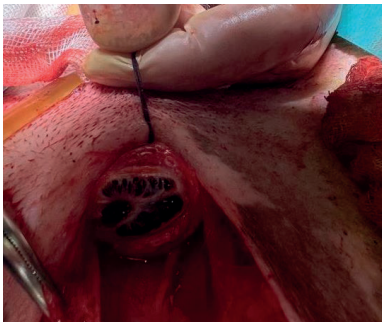


Figure 3. Paraphimosis - image from surgery

Postoperatively, it was recommended to use an Elizabethan collar until the sutures were removed to prevent self-mutilation of the operated area. Postoperative therapy was continued for 5 days with Amoxicillin + clavulanic acid (Synulox) 20 mg/kg/day and analgesia was provided for 3 days postoperatively by Meloxicam 0.2 mg/kg/day. A slight haemorrhage was observed in the first 3 days postoperatively from the urethrostomy, especially after urination, very easily controlled only by manual compression.

RESULTS AND DISCUSSIONS

Penile trauma is less common in the canine species and usually manifests itself because of

congenital deficiencies or due to prolonged erection, masturbation or circular hair rings around the preputial orifice, which prevent the penis from retracting into the sheath.

The literature describes a whole series of non-surgical and surgical techniques for correcting congenital paraphimosis, highlighting the fact that partial or total amputation of the penis remains a restricted option for cases in which necrotic changes are very extensive and hinder functional recovery, respectively the ability to urinate and the preservation of reproductive function (Papazoglou, 2001).

The location for the amputation of the penis is dictated by the affected area and the extent of the circulatory lesions. Subtotal penile amputation usually includes the space between the penile fornix and the anterior edge of the ischium and includes resection of the free portion of the penis along with the foreskin, adjacent scrotal tissue, and external genitalia, respectively the testicles. As a rule, a scrotal urethrostomy is associated with this technique, to ensure a viable urinary tract.

The literature does not provide a validated system for assessing the results obtained after total or partial amputation of the penis in dogs. The immediate criteria for evaluating the surgical success were closely related to the animal's capacity for voluntary urination, its comfort during rest periods, possible local complications during the healing process until the removal of the threads. The only complication, cited in the literature, was represented by the reduced intensity of bleeding during urination from the scrotal urethrostomy in the first 3 days postoperatively. Its control did not require specific medication and did not influence the healing of surgical wounds.

CONCLUSIONS

Even if penile trauma is very rare condition in male dogs, the paraphimosis remains a true provocation because of the complex vascular anatomy of dog penis and urethra.

The permanent prevention of this emergency can be achieved simply by sterilizing males that are not intended for reproductive activity or by carefully monitoring them during periods of sexual activity of female dogs.

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