


## POSTIOPLASTY AS A TREATMENT FOR CONGENITAL PHIMOSIS IN A DOG: A CASE REPORT

### POSTIOPLASTIA COMO TRATAMENTO DA FIMOSE CONGÊNITA EM CÃO: RELATO DE CASO

### POSTIOPLASTIA COMO TRATAMIENTO DE LA FIMOSIS CONGÉNITA EN UN PERRO: REPORTE DE CASO

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#### ABSTRACT

Phimosis is a condition characterized by the inability to exteriorize the penis due to narrowing of the preputial orifice, which may compromise urination and the animal's welfare. The present study aims to report a case of congenital phimosis in a one-year-old male dog, as well as to describe the surgical correction performed through posthioplasty. The patient had a history of urinary difficulty since birth associated with malformation of the preputial orifice; therefore, the diagnosis was established based on clinical examination and complementary laboratory and imaging tests. The treatment consisted of surgical correction associated with orchiectomy, resulting in a satisfactory postoperative outcome without complications or adverse events. After clinical follow-up, complete restoration of normal urination and return to regular activities were observed. It is concluded that the surgical correction employed was effective, as it promoted a significant improvement in the patient's quality of life.

**Keywords:** Dog. Prepuce. Veterinary Surgery.

#### RESUMO

A fimose é uma afecção caracterizada pela incapacidade de exteriorização do pênis em decorrência do estreitamento do óstio prepucial, que pode comprometer a micção e o bem-estar do animal. O presente trabalho tem como objetivo relatar um caso de fimose congênita em um cão macho, com um ano de idade, bem como descrever a correção cirúrgica realizada por meio da postioplastia. O paciente apresentava histórico de dificuldade miccional desde o nascimento, associada à malformação do óstio prepucial, de forma que o diagnóstico foi estabelecido com base no exame clínico e em exames complementares laboratoriais e de imagem. O tratamento instituído consistiu na correção cirúrgica associada

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à orquiectomia, com evolução pós-operatória satisfatória, sem intercorrências ou complicações. Após o acompanhamento clínico, observou-se restabelecimento completo da micção e retorno do animal às atividades normais. Conclui-se que a correção cirúrgica empregada mostrou-se eficaz, uma vez que promoveu a melhora significativa da qualidade de vida do paciente.

**Palavras-chave:** Cão. Cirurgia Veterinária. Prepúcio.

## **RESUMEN**

La fimosis es una afección caracterizada por la incapacidad de exteriorizar el pene como consecuencia del estrechamiento del orificio prepucial, lo que puede comprometer la micción y el bienestar del animal. El presente trabajo tiene como objetivo reportar un caso de fimosis congénita en un perro macho de un año de edad, así como describir la corrección quirúrgica realizada mediante posthioplastia. El paciente presentaba antecedentes de dificultad miccional desde el nacimiento, asociada a la malformación del orificio prepucial, por lo que el diagnóstico se estableció con base en el examen clínico y en exámenes complementarios de laboratorio e imagen. El tratamiento instituido consistió en la corrección quirúrgica asociada a la orquiectomía, con una evolución posoperatoria satisfactoria, sin complicaciones ni intercorrencias. Tras el seguimiento clínico, se observó el restablecimiento completo de la micción y el retorno del animal a sus actividades normales. Se concluye que la corrección quirúrgica empleada resultó eficaz, ya que promovió una mejora significativa en la calidad de vida del paciente.

**Palabras clave:** Perro. Cirugía Veterinaria. Prepucio.

## 1 INTRODUCTION

Disorders of the penis and prepuce in dogs represent a set of clinically and surgically relevant conditions in the routine of veterinary medicine, since they may compromise urination, reproduction, and animal welfare (Johnson, 2005; Root Kustritz, 2008; Volpato, 2010). Among these disorders, phimosis, also referred to by some authors as preputial stenosis, is characterized by the partial or total inability to exteriorize the penis due to narrowing of the preputial ostium (Sarierler; Kara, 1998).

Although considered a relatively uncommon condition, phimosis in dogs may lead to important clinical consequences, such as recurrent balanoposthitis, accumulation of smegma, discomfort, pain, and, in more severe cases, difficulty or alteration of urinary flow (De la Puerta; Baines, 2012). The disorder may have a congenital origin, associated with failures in embryonic development of the prepuce, or be acquired, secondary to chronic inflammatory processes, trauma, excessive scarring, or local neoplasms (Volpato, 2010).

Surgical correction through postioplasty is widely described as the treatment of choice in clinically significant cases, presenting good outcomes when correctly indicated and performed (Weide et al., 2011; Vadalía et al., 2014). Thus, understanding the anatomical, etiological, and clinical aspects of phimosis is fundamental for the proper management of affected patients.

The present study aims to conduct a literature review on the treatment of phimosis in dogs, with emphasis on surgical approaches, especially postioplasty, as well as to address the main aspects related to the condition, such as definition, etiology, clinical manifestations, diagnosis, and prognosis. In addition, the study presents a clinical case submitted to surgical correction through postioplasty, whose findings are analyzed and discussed in light of the literature, allowing the evaluation of the adopted therapeutic approach, the obtained results, and the effectiveness of the procedure in restoring preputial function and the patient's quality of life.

## 2 THEORETICAL FRAMEWORK

Disorders of the penis and prepuce in dogs are of clinical and surgical relevance in veterinary practice, since they may compromise essential functions such as urination, reproduction, and animal welfare. According to Johnson (2005) and Root Kustritz (2008), alterations in this anatomical region often require specific and careful interventions due to their functional implications and tissue sensitivity. In this context, phimosis stands out as a

condition of clinical interest, both because of its pathophysiology and therapeutic possibilities, especially surgical ones, justifying its systematic approach in the present study.

## 2.1 DEFINITION AND TERMINOLOGY

Phimosis in dogs is defined as the inability to exteriorize the penis through the prepuce, resulting from an abnormal narrowing of the preputial ostium (Sarierler; Kara, 1998). Some authors use the term preputial stenosis as a synonym, especially when the causal factor is directly related to a reduction in the diameter of the preputial opening (Volpato, 2010).

It is important to differentiate phimosis from paraphimosis, a condition in which the penis is exteriorized but cannot return into the prepuce, constituting a distinct condition in both pathophysiology and therapeutic approach (De la Puerta; Baines, 2012). In phimosis, the main problem lies in the mechanical limitation imposed by the prepuce, and not in edema or penile entrapment.

From a clinical standpoint, phimosis can be classified as partial or complete, depending on the degree of obstruction of the preputial opening, and as congenital or acquired, according to its etiology (Monteiro, 2022).

## 2.2 ETIOLOGY AND PATHOGENESIS

Congenital phimosis results from alterations in the embryonic development of the prepuce, leading to incomplete formation or excessive narrowing of the preputial ostium (Sarierler; Kara, 1998). This form is usually diagnosed in young dogs, often when the animal reaches sexual maturity and begins to show difficulty in penis exteriorization (Vadalia et al., 2014).

Acquired phimosis is associated with factors such as chronic inflammation, recurrent balanoposthitis, local trauma, excessive scarring after injuries or surgical interventions, as well as neoplastic processes involving the prepuce (Volpato, 2010). In these cases, narrowing occurs progressively and may worsen over time if no appropriate intervention is performed.

Regardless of origin, the pathogenesis of phimosis involves mechanical restriction of the penis, favoring the accumulation of secretions, bacterial proliferation, and perpetuation of local inflammatory processes, creating a cycle of worsening of the condition (De la Puerta; Baines, 2012).

### 2.3 CLINICAL SIGNS AND COMPLICATIONS

The clinical signs of phimosis in dogs vary according to the severity of preputial narrowing and the presence of secondary disorders. Among the most common findings are difficulty or impossibility of penis exteriorization, accumulation of smegma, fetid odor, and recurrent episodes of balanoposthitis (Volpato, 2010).

In some cases, changes in the urinary stream, urine dribbling, or discomfort during urination may be observed, especially when the narrowing is pronounced (Kunzler et al., 2013). Complications include secondary bacterial infections, chronic pain, and impairment of the animal's reproductive function (De la Puerta; Baines, 2012).

### 2.4 DIAGNOSIS

The diagnosis of phimosis in dogs is predominantly clinical, based on anamnesis and detailed physical examination of the genital region. Inspection of the prepuce reveals narrowing of the ostium and impossibility of penile exteriorization, allowing differentiation from other conditions (Volpato, 2010).

Differential diagnosis should include penile hypoplasia, persistent frenulum, paraphimosis, and more complex congenital anomalies of the genital tract, such as disorders of sexual development (Rozanska et al., 2016). Complementary examinations are rarely necessary and are indicated only when there is suspicion of associated diseases.

### 2.5 TREATMENT

Treatment of phimosis in dogs should be individualized and take into account the severity of preputial narrowing, the presence of clinical signs, and the occurrence of secondary complications (Volpato, 2010). Although mild and asymptomatic cases may be clinically monitored, most authors agree that surgical intervention is the treatment of choice in animals with functional impairment (De la Puerta; Baines, 2012).

Postioplasty consists of a surgical procedure aimed at enlarging the preputial ostium, allowing adequate exteriorization of the penis and restoration of normal preputial anatomical function (Weide et al., 2011). This technique is widely described as effective and safe (Slatter, 2003; Kunzler et al., 2013; Fossum, 2019).

Several technical variations are described depending on the extent of stenosis and anatomical conformation of the prepuce, aiming to avoid cicatricial retraction and recurrence (Vadalia et al., 2014). Surgical planning should preserve local blood supply and minimize

tissue trauma (Volpato, 2010).

In the postoperative period, pain control, local hygiene, and prevention of excessive licking are essential for procedural success (De la Puerta; Baines, 2012), with Elizabethan collar use and antibiotic therapy indicated as necessary (Vadalia et al., 2014).

Studies indicate a high success rate of posttioplasty, with resolution of clinical signs in most cases (Weide et al., 2011; Kunzler et al., 2013), with recurrence considered uncommon (Volpato, 2010).

In congenital cases, orchiectomy is recommended when there is no reproductive interest, aiming to reduce hereditary transmission and behavioral complications (De la Puerta; Baines, 2012; Fossum, 2019).

## 2.6 PROGNOSIS AND POSTOPERATIVE COMPLICATIONS

The prognosis of phimosis in dogs undergoing surgical correction is generally favorable, provided that no more severe associated conditions are present (Weide et al., 2011). Postoperative complications include transient edema, surgical wound infection, and, rarely, recurrence of stenosis due to excessive scarring (Kunzler et al., 2013).

## 3 CASE STUDY

A one-year-old male Pinscher dog was presented with a history of dysuria since birth, according to the owner's report. Clinical examination revealed malformation of the preputial ostium, characterized by marked narrowing of the preputial opening, which prevented penile exteriorization and visualization of the glans (Figure 1). Evaluation of the reproductive system showed both testes in a topical position, with size and consistency appropriate for the animal's age, thereby ruling out cryptorchidism.



**Figure 1**

*(A) Attempted penile exteriorization. (B) Appearance of the preputial ostium*



Source: Prepared by the authors.

Complementary laboratory tests, including complete blood count and serum biochemical profile, revealed no clinically significant abnormalities. Ultrasonographic examination of the penile region was additionally performed to assess the anatomical integrity of local structures and to exclude associated disorders. No abnormalities were detected, as the regional anatomy was preserved and consistent with normal findings. Based on the clinical and imaging results, a diagnosis of congenital phimosis was established, characterized by the inability to exteriorize the penis due to narrowing of the preputial ostium, without evidence of urethral positional or conformational abnormalities.

In view of this diagnosis, surgical correction by postioplasty combined with orchiectomy was indicated, with the objectives of restoring proper preputial anatomy, improving patient comfort, and preventing future reproduction.

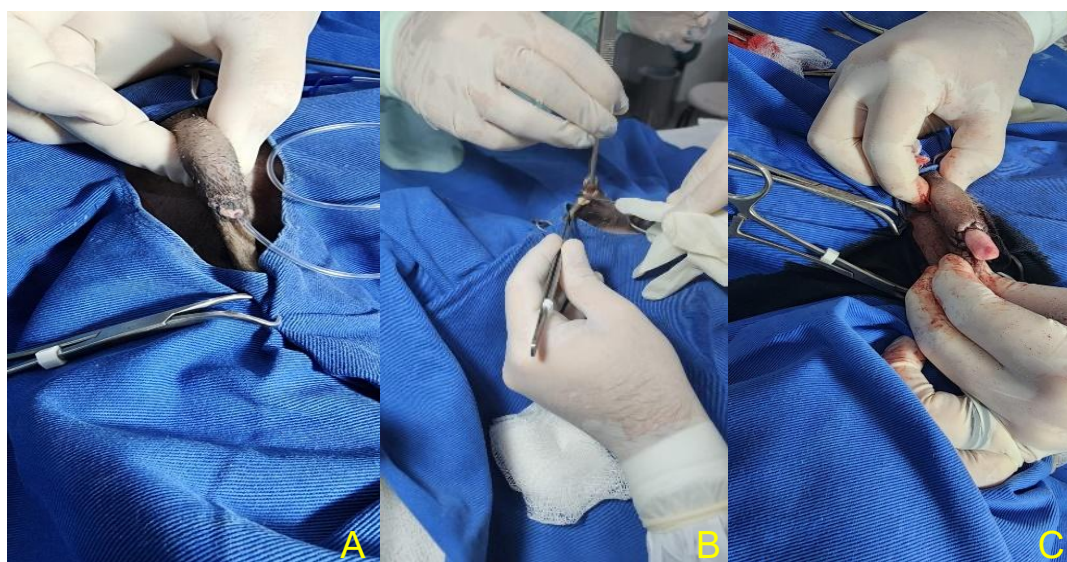
Upon presentation for surgery, preanesthetic medication consisted of acepromazine (0.03 mg/kg) and tramadol hydrochloride (4 mg/kg), both administered intramuscularly. Anesthetic induction was achieved using midazolam (0.3 mg/kg) and propofol (5 mg/kg),

administered intravenously, followed by endotracheal intubation and maintenance anesthesia with isoflurane vaporized in 100% oxygen.

After anesthetic induction, wide trichotomy of the caudal abdominal and genital regions was performed, followed by antisepsis with alcoholic solution, in accordance with routine surgical preparation. The patient was positioned in dorsal recumbency, with limbs properly secured to ensure intraoperative stability. Definitive antisepsis of the surgical field and urethral catheterization were subsequently performed (Figure 2A). Surgical incision of the preputial tissue was then carried out, with controlled resection of adjacent subcutaneous tissue using an electrosurgical unit, thereby enlarging the preputial ostium and enabling adequate penile exteriorization (Figures 2B and 2C).

## Figure 2

*Surgical stages of phimosis correction by postioplasty in a dog. (A) Initial aspect of the catheterized preputial ostium demonstrating marked narrowing and inability of penile exteriorization. (B) Surgical incision and controlled resection of preputial tissue with enlargement of the preputial ostium. (C) Penile exteriorization following enlargement of the preputial opening, with adequate visualization of penile structures*



Source: Prepared by the authors.

Subsequently, excess preputial skin was excised through controlled surgical incisions to further enlarge the preputial ostium and allow proper penile exteriorization. After removal of the excess tissue, anatomical repositioning of the genital organ was performed to restore



preputial function and enable physiological urination. Closure of the preputial opening was achieved using poliglecaprone 25 suture material in a simple interrupted pattern, ensuring appropriate tissue apposition and favoring healing by first intention. Following postioplasty, orchiectomy was performed using the open pre-scrotal technique (Figure 3).

### Figure 3

*Immediate postoperative appearance following postioplasty for phimosis correction associated with orchiectomy using the open pre-scrotal technique in a dog. Note the enlarged preputial ostium with appropriate suture apposition allowing penile exteriorization, as well as the orchiectomy surgical wound, both without signs of excessive hemorrhage or local complications.*



Source: Prepared by the authors.

During the transoperative period, enrofloxacin (5 mg/kg), meloxicam (0.15 mg/kg), and dipyrone (25 mg/kg) were administered intravenously. Postoperatively, enrofloxacin (5 mg/kg, SID for 10 days) and meloxicam (0.15 mg/kg, SID for 4 days) were prescribed orally. Additionally, daily cleansing of the surgical wound with saline solution and topical application of rifamycin spray twice daily were recommended until suture removal, which occurred 15 days after surgery.

In the immediate postoperative period, the patient exhibited satisfactory anesthetic recovery, remaining alert, responsive, and with physiological parameters within normal limits. During clinical follow-up, no postoperative complications such as suture dehiscence, excessive hemorrhage, signs of infection, or manifestations of intense pain or significant discomfort were observed. The surgical wound evolved favorably, with appropriate healing and absence of abnormal secretions.

The animal returned to the clinic 15 days postoperatively for evaluation and suture removal, which was performed uneventfully. At that time, adequate wound healing and complete suture integrity were confirmed, with no local or systemic abnormalities detected.

At late follow-up, approximately 30 days after surgery, the owner reported full return to habitual activities, with normal behavior and adequate urination, without signs of pain, discomfort, or urinary difficulty. From a clinical standpoint, the surgical intervention was deemed successful, as it resulted in significant improvement in the patient's quality of life and satisfactory restoration of preputial and urinary function.

#### **4 DISCUSSION**

Phimosis in dogs is described in the literature as a condition characterized by the inability to exteriorize the penis due to narrowing of the preputial ostium, which may be of congenital or acquired origin (Volpato, 2010; De la Puerta; Baines, 2012). In the present report, the animal presented a history of urinary difficulty since birth associated with malformation of the preputial ostium, findings consistent with congenital phimosis, corroborating previous descriptions that indicate this condition as clinically perceptible from early stages of the animal's life (Sarierler; Kara, 1998).

The diagnosis of phimosis is primarily based on clinical examination; therefore, inspection of the preputial region is essential for identifying ostial narrowing and the impossibility of penile exteriorization (Volpato, 2010). In the reported case, laboratory and imaging examinations were used as complementary tools, allowing exclusion of systemic alterations and other associated genital anomalies, as recommended by authors who emphasize the importance of differential diagnosis with conditions such as penile hypoplasia, paraphimosis, and disorders of sexual development (De la Puerta; Baines, 2012; Rozanska et al., 2016).

Surgical correction by means of postioplasty is considered the treatment of choice for clinically significant phimosis in dogs, especially when there is functional impairment or risk

of secondary complications, such as recurrent balanoposthitis and urinary alterations (Weide et al., 2011; Vadalía et al., 2014). In the present case, enlargement of the preputial ostium through controlled resection of excess tissue allowed adequate penile exteriorization and restored the anatomical function of the prepuce, in accordance with surgical principles described in the literature.

Several authors report that proper execution of the surgical technique, associated with respect for the principles of minimal tissue manipulation and preservation of local vascularization, is decisive for procedural success and for preventing postoperative complications such as excessive edema, infection, or recurrence of stenosis (Volpato, 2010; Kunzler et al., 2013). In the present report, the absence of transoperative and postoperative complications suggests that the employed technique was effective and consistent with recommendations described in similar studies.

The association of postioplasty with orchiectomy, as performed in this case, is described by some authors as a beneficial approach in animals without reproductive purpose, especially in cases of congenital phimosis, considering the possible hereditary nature of the condition and the reduction of sexual behaviors that could interfere with postoperative healing (De la Puerta; Baines, 2012; Monteiro, 2022). This approach also contributes to clinical management of the patient and prevention of future complications.

The clinical outcome observed in this report, with satisfactory recovery, absence of complications, and complete restoration of normal urination, is consistent with results described in case reports and small clinical series available in the literature, which indicate postioplasty as a procedure with a favorable prognosis when correctly indicated (Weide et al., 2011; Kunzler et al., 2013; Singh et al., 2018). Thus, the present case reinforces the effectiveness of surgical correction of phimosis in dogs and contributes to the consolidation of clinical-surgical knowledge regarding this condition.

## **5 CONCLUSION**

Phimosis in dogs, although considered a relatively uncommon condition, may result in significant functional alterations, especially related to urination and animal welfare. The present study demonstrated that proper identification of the condition, combined with accurate clinical diagnosis, is fundamental for the indication of appropriate treatment. Surgical correction by means of postioplasty proved to be an effective and safe technique, as it promoted enlargement of the preputial ostium, restoration of anatomical function, and

significant improvement in the patient's quality of life. The concomitant performance of orchiectomy was indicated considering the exclusion of the patient from reproduction, aiming to prevent transmission of the condition to a potential offspring. Thus, the reported case reinforces the importance of recognizing preputial disorders and correctly indicating the available surgical techniques, in addition to highlighting postioplasty as a resolute alternative with favorable prognosis for the treatment of phimosis in dogs.

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