

# Perineal urethrostomy in cats with urethral obstruction due to iatrogenic penile trauma: Two clinical cases

## Abstract

**Objective:** Two cases of cats with urinary obstruction due to iatrogenic complications are presented. The intention of this article is to show the application of the surgical technique of perineal urethrostomy with epidural anesthesia as a viable, accessible and safe solution.

**Materials and methods:** Recently published and studied surgical and anesthetic techniques were used in both cats, the material and methodological requirements are accessible to most veterinary surgeons.

**Results:** The application of the surgical technique immediately resolved both urinary problems after months of periuria and pain. One year after surgeries, both cats retain their normal urination habits, greatly improving their well-being.

**Conclusion:** The feline perineal urethrostomy provides an affordable solution to many complications of recurrent feline lower urinary tract disease (FLUTD). Its performance is relatively simple and cheap, epidural block is preferable to reduce pain and discomfort during recovery from anesthesia. Even though it is a safe procedure, possible complications should be taken into consideration and the recovery of urethrostomized patients should be monitored.

**Keywords:** epidural anesthesia, FLUTD, iatrogenesis, obstructive, surgery, urethra

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## Introduction

Feline lower urinary tract disease (FLUTD) is a common and diverse pathology. It can occur in about 2.2% of cats that attend veterinary clinics and its origin can be idiopathic cystitis, urinary tract infection, crystalluria, urolithiasis, among others.<sup>1</sup> Male cats that consume commercial dry food diets and have a life of low physical activity indoors are more likely to present FLUTD.<sup>1</sup> Clinical signs can be mild such as periuria (urination in inappropriate places) or severe such as depression, anorexia, dysuria, stranguria and acute bladder pain.<sup>1,2</sup> The disease can be subclassified into obstructive and non-obstructive.<sup>3</sup> An obstructed cat requires a rapid approach prioritizing effective and sustained unclogging, otherwise the affected animal can quickly develop acute kidney failure, shock and death.<sup>3</sup> However, inappropriate urethral catheterization can traumatize the urethra or cause penile abnormalities leading to recurrence of obstruction.<sup>2</sup>

Once a cat with urethral obstruction has been stabilized, an attempt should be made to find the source of the problem for treatment. Despite these measures, cats with FLUTD have between 39 and 65% probability of presenting urinary clinical signs and risk of obstruction again within 1 to 2 years from the first appearance.<sup>4</sup> For this reason, in some cases it is decided to perform perineal urethrostomy as a permanent solution to recurrent obstructions, either due to the reappearance of the problem or due to iatrogenic complications.<sup>3</sup> This surgical technique was published for the first time more than 50 years ago,<sup>3</sup> and is relatively simple and accessible to the veterinary surgeon, although it is not free of complications.<sup>2</sup>

The objectives of the present work are the presentation of two clinical cases of recurrent obstructive FLUTD in males with penile anatomical abnormalities and the description of the surgical technique of perineal urethrostomy applied in each one, as well as the monitoring of their recovery.

## Anamnesis

Two cases of male cats with urethral obstruction were presented at the author's veterinary office in Misantla, Veracruz, Mexico. Both young adult cats, around three years old, neutered and with a previous history of FLUTD. The first case arrived completely obstructed while in the second the obstruction was partial. Both cats underwent surgery for total obstruction in another office one and two years ago, respectively. The first case underwent a difficult unclogging with a urethral catheter, according to the owners, while in the second a partial amputation of the penis was performed. The first cat did not follow any diet. In the second, a prescription diet for feline urinary disease was indicated after the aforementioned intervention.

## Clinical examination results

In both patients, the dilated and firm bladder was palpated due to urinary retention. Both had pain on palpation of the bladder. In the second patient, scant urine output was observed. During the examination, severe inflammation and fistulous lesions were observed in the distal region of the penis of the first patient (Figure 1). While in the second the penis was not distinguished within the foreskin, due to the inflammation of the latter and penile alterations (Figure 2).

## Diagnosis

Clinical diagnosis in these cases did not require more than clinical examination and anamnesis. However, once the obstruction was resolved in both patients, a urine sample was sent to the clinical laboratory for a general urine examination to be performed on each patient. The first presented abundant struvite crystals, leukocytes, proteins and blood. While the second case did not present changes in urine.



**Figure 1** Examination of the first patient before surgery.



**Figure 2** Examination of the second patient before surgery.

## Treatment

Once the venous access was achieved, fluid therapy was instituted and an attempt was made to resolve the obstruction under general anesthesia. Acepromazine (Calmivet injectable solution, 5 mg/mL, Vetoquinol, France, 0.1 mg/kg, i.m.) and meloxicam (Metacam injectable solution, 5 mg/mL, Boehringer Ingelheim, USA, 0.3 mg/kg, i.m.) were administered followed by 4 mg/kg i.v. of the tiletamine/zolacepam combination (Zoletil injectable solution, 100 mg/mL, Virbac, France) at 15 minutes. In the first patient it was possible to place a Sovereign Tom Cat urethral catheter (Cardinal Health, Canada), although retrohydropropulsion with the same catheter was required in the distal portion, due to obstruction. Bladder lavage was performed with physiological saline solution until the solution ran transparent and clear. However, in the second patient it was not possible to find the penile urethra due to the inflammation of the foreskin and the anatomical alterations that the penis presented, where the distal portion was practically absent. Considering that the obstruction was partial, it was decided to continue stabilizing the patient until the time of the surgical procedure. It was determined that the most convenient thing in both cases was to perform a perineal urethrostomy. Surgery was performed the day after each patient's admission. In this procedure, dexmedetomidine (Dexdomitor injectable solution, 0.5 mg/mL, Orion

Pharma, Finland) was used as anesthetic premedication at 0.04 mg/kg i.m., followed by 8 mg/kg of the tiletamine/zolacepam combination i.v. 15 minutes later. In addition, a regional block was performed with epidural anesthesia with bupivacaine (Buvacaine injectable solution, 5 mg/mL, Pisa, Mexico) using a volume of 0.2 mL/kg through a 22 G x 55 mm pediatric Tuohy-type needle (Perican, B. Braun, Germany). Once the epidural anesthesia was applied, each patient was placed in the ventral decubitus position, fixing the tail towards the head, with a pillow on the abdomen to elevate the perineal area. A purse-string suture was used around the anus to prevent accidental passage of feces. The surgical area was then shaved and the appropriate antiseptics were applied to proceed with the surgery. An incision was made around the foreskin and scrotum with a number 15 scalpel blade. The subcutaneous tissue was then debrided with small hemostatic forceps. Once the penis was fully exposed to the proximal part, the penile ligament and the ischiurethral and ischiocavernosus muscles were sectioned ventrally. The bulbourethral glands on the dorsal and proximal portion of the penis were exposed. With a surgeon's forceps, the penile retractor muscle was elevated for resection, located immediately dorsal to the urethra. In this way, the penis was further freed to make it possible to incise the pelvic urethra at the level of the bulbourethral glands. A small cut was made to pierce the urethra to the mucosa and the cut was continued proximally about one centimeter with iris scissors. The urethral mucosa and skin were sutured starting at the proximal commissure of the cut made in the urethra. This section of urethral mucosa was joined with the dorsal part of the initial perineal skin incision. Starting from that point, the skin was continued ventrally sutured with the mucosa towards the most distal portion of the urethral incision on each side, until the end of the cut in the urethra was reached. 4-0 gauge nylon suture was used with simple separated sutures. Finally, a ligature was made in the last part of the sutured urethra, covering the penis, and a cut was made slightly distal to the ligature to completely remove it, which can be seen with its alterations in Figure 3, Figure 4. The ligation performed was hidden with a subcutaneous suture using 4-0 gauge polyglycolic acid, and the mucosa-skin suture was finished with nylon in the ventral perineal portion of the incision and the initial anal suture was removed. Both patients were sent home the next day with a prescription: meloxicam 0.1 mg/kg PO every 24 hours for 7 days. The sutures were removed after 10 days and the improvement in both was very noticeable (Figure 5), (Figure 6). One year after the procedure, both cats continue on a prescription diet for urinary tract disease (Urinary S/O Feline, Royal Canin), they have voluntary urination and have had no difficulty urinating.



**Figure 3** Penis, foreskin and scrotum of the first patient.



**Figure 4** Penis, foreskin and scrotum of the second patient. A cut was made along the foreskin to show its interior, where remains of the penis can be seen.



**Figure 5** First urethrostomized patient.



**Figure 6** Second urethrostomized patient.

## Discussion

The technique used in the present work is relatively simple; with adequate preparation it can be performed without major complications by any veterinary surgeon.<sup>5</sup> It has been described in more recent publications and some with variants such as the ventral approach.<sup>3,6</sup> However, in a prospective study with 28 urethrostomized cats, the main complication was recurrent urinary tract infection (UTI), which occurred in 22.7% of the animals studied in a period of 24 months. 77.2% of the animals presented bacteruria, which suggests that the surgical procedure increases the probability of the rise of bacteria in the lower urinary tract.<sup>2</sup> Other authors report the formation of a rectourethral fistula after an inadequate surgical approach.<sup>7</sup> Despite this, the owner satisfaction rate hovers around 82%.<sup>2</sup>

It was decided to use epidural anesthesia to improve pain control, as well as to reduce the requirements for general anesthesia. The technique described by García-Pereira was used, who considers that the epidural block technique in the lumbosacral space can be used by any professional with a basic level of training. In addition, it is cheap and has little chance of complications.<sup>8</sup> However, according to the American Animal Hospital Association (AAHA) guideline on anesthesia and monitoring in dogs and cats, regional anesthesia for a perineal urethrostomy can be sacrococcygeal or coccygeal epidural. This method is even simpler and safer than in the lumbosacral space and does not necessarily require an epidural needle; the method is described with a hypodermic needle, which makes it even cheaper and more accessible.<sup>9</sup> During the procedure in the present study, none of the patients presented anesthetic problems. Few hours after surgery, both fully recovered their motor skills.

In the study by Sousa-Filho and his coworkers on 18% of cats with an indication for perineal urethrostomy had penile or urethral trauma as an obstructive cause.<sup>2</sup> While none of the cats that had an indication for prepubic urethrostomy had this primary cause.<sup>2</sup> The choice of this technique is preferable compared to other similar ones in cases of anatomical or functional alterations of the penile urethra, specifically in cases of iatrogenic dysfunction.

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## Conflict of Interest

Author declares there is no conflict of interest in publishing the article.

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## References

1. Piyaungsri K, Tangtrongsup S, Thitaram N, et al. Prevalence and risk factors of feline lower urinary tract disease in Chiang Mai, Thailand. *Scientific Reports*. 2020;10(1):196.
2. Sousa-Filho RP, Nunes-Pinheiro DCS, Sampaio KO, et al. J. Clinical outcomes of 28 cats 12-24 months after urethrostomy. *Feline Med Surg*. 2020;22(10):890–897.
3. Nye AK, Luther JK. Feline perineal urethrostomy: A review of past and present literature. *Topics in Companion An Med*. 2018;33(3):77–82.
4. Ozgermen BB, Avci N. Successful treatment of a urinary foreign body by cystotomy in a cat. *Rev MVZ Cordoba*. 2022;27(2):1–5.
5. Welch-Fossum T, Hedlund CS, Johnson AL, et al. Small animal surgery. Elsevier Spain; 2009.
6. Goh CSS, Seim HB. Feline perineal urethrostomy ventral approach. *Today's Veterinary Practice*; 2014.
7. Heo SY, Lee HB, Kim NS. Prepubic urethrostomy for surgical correction of the urethral stricture and rectourethral fistula after perineal urethrostomy in a cat. *J Vet Clin*. 2012;29(4):331–333.
8. García-Pereira F. Epidural anesthesia and analgesia in small animal practice: An update. *Vet J*. 2018;242:24–32.
9. Grubb T, Sager J, Gaynor JS, et al. 2020 AAHA anesthesia and monitoring guidelines for dogs and cats. *J Am Anim Hosp Assoc*. 2020;56(2):59–82.