

## Outcome of preputioplasty in cats with acquired phimosis: 8 cases

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### ABSTRACT

Preputioplasty is a surgical procedure performed to increase the orifice diameter. This study was aimed to describe the clinical outcome of eight feline acquired phimosis that underwent preputioplasty. History, age, breed, body weight, urine and blood analysis, radiographic, ultrasonographic and clinical findings at the time of diagnosis were recorded and collected. Surgical procedures in cats were completed without any complications except for one cat, which had post-operative stricture formation. Normal urination was observed following surgeries in all cases. This cat required perineal urethrostomy surgery. In conclusion, preputioplasty was performed successfully in 7 of 8 cats. The outcome of preputioplasty in cats was good, except for one case that needs a second surgery due to a stricture subsequently formed. Future studies with larger case numbers are needed to confirm our findings.

## INTRODUCTION

Phimosis is characterized by the inability of the penis extrusion due to the absence or narrowing of the preputial orifice. It can be congenital or acquired in cats (De Vlaming et al, 2019). The most common causes of acquired phimosis in cats are neoplasia, cellulitis, inflammation, edema or scar tissue that occurs after trauma, sucking by littermates or licking by the dam (De Vlaming et al, 2019; Meilán, 2006). Clinical signs may be asymptomatic or life-threatening, depending on whether the pubertal orifice allows urination or not. Clinical findings in cats with acquired phimosis include stranguria, pollakiuria, preputial swelling, reluctance to mating and secondary balanoposthitis and ulceration caused by urine accumulation in the preputium cavity (Papazoglou and Kazakos, 2002; Yoon and Jeong, 2013; May and Hauptman, 2013).

The diagnosis of the narrowed preputial orifice can be achieved through the exteriorization of the penis (May and Hauptman, 2013). In veterinary medicine, preputioplasty is a surgical procedure performed to enlarge the orifice diameter in order to treat phimosis. (Papazoglou and Kazakos, 2002; Yoon and Jeong, 2013; May and Hauptman, 2013).

The purpose of this study was to report the clinical outcome of eight cases of feline-acquired phimosis that underwent preputioplasty.

## MATERIAL and METHODS

For this retrospective research, the medical records of Atatürk University Veterinary Faculty Animal Hospital were retrieved between December 2018 and December 2022, for client-owned cats that underwent preputioplasty. Data based on history, age, breed, body weight, urine and blood analysis, radiographic, ultrasonographic and clinical findings at the time of diagnosis were collected. Postoperative complications were evaluated as either minor (no need for reoperation) or major complications (requiring reoperation). Follow-up data obtained medical records were noted on the 3rd, 10th, 30th and 60th postoperative days and complications were documented (Figure 1E).

### *Surgical procedure*

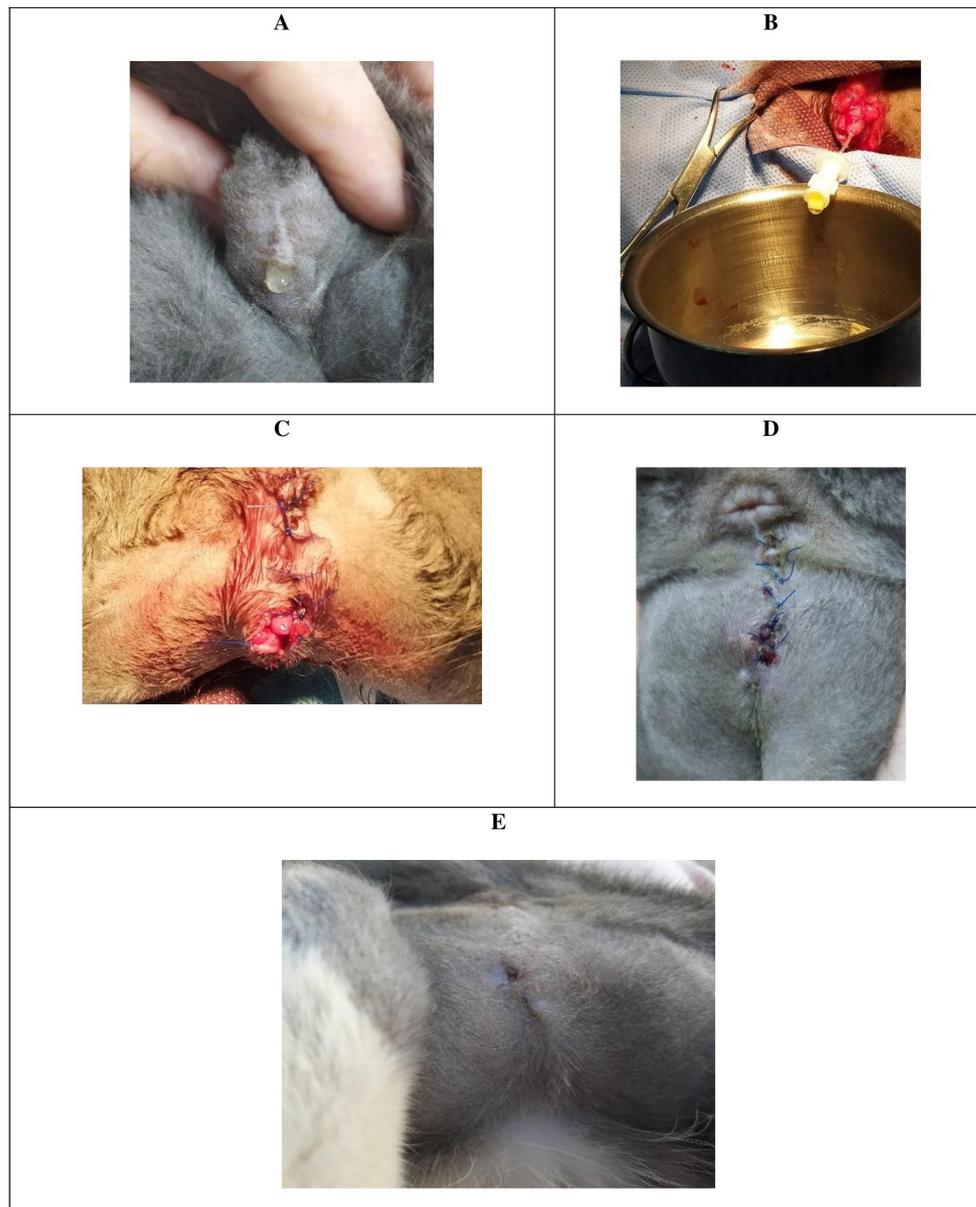
After a routine pre-operative physical and complete blood count assessments, medetomidine HCL (80 µ/kg, IM; Domitor®, Zoetis, İstanbul) and tramadol (2 mg/kg, SC; Contramal®, Abdi İbrahim, İstanbul) were administered for sedation and analgesia, respectively, followed by anesthetic induction with propofol (3 mg/kg, IV; Propofol, Braun-Deutschland). The animals were intubated and anesthesia was maintained with sevoflurane (Sevorane %100, Abbvie, İstanbul) and in 100% oxygen (200 ml/kg/min). At the time of anesthetic induction, cefazolin (20 mg/kg, IV; Maxicilin, Yavuz ilaç, İstanbul) was administered and normal saline was infused intravenously at a

rate of 10 ml/kg/h during all surgical procedures.

Animals were positioned in sternal (Figure 1A) or dorsal (Figure 1B) recumbency and the preputial region was clipped and prepared for aseptic surgery. The scar tissue was resected by a round-shaped 5 mm incision from the preputial orifice (Figure 1B, C, 2B). The preputial mucosa was opposed to the ipsilateral incised skin edge using simple interrupted sutures of 3-0 polypropylene (Propilen, Dogsan, Germany) (Figure 1D, 2C). Cefazolin (20 mg/kg, IV) and meloxicam (0.05 mg/kg, PO; Boehringer Ingelheim, Istanbul) were administered during the postoperative period for two days. The Elizabethan collar was placed on for 7 days to protect the area from licking.

## RESULTS

Animal breeds exposed to acquired phimosis were as follows: one British Shorthair, one Persian cat and six Tabby cats. The median age was 2 (range 12 to 36 months), and the median body weight was 4.3 kg (range 3.9 to 5.3 kg). All cats suffered from stranguria and pollakiuria, while hematuria was observed in one cat. Five cats had considerable preputial swelling due to urine pooling in the prepuce. The duration of clinical symptoms ranged from 1 to 3 months. A urinary catheter was attempted to the bladder through the preputial opening but it was unsuccessful except for one cat. Urinalysis was normal in all cats, however, one cat presented hematuria and urine crystals. In the ultrasonographic examination of the bladder, no



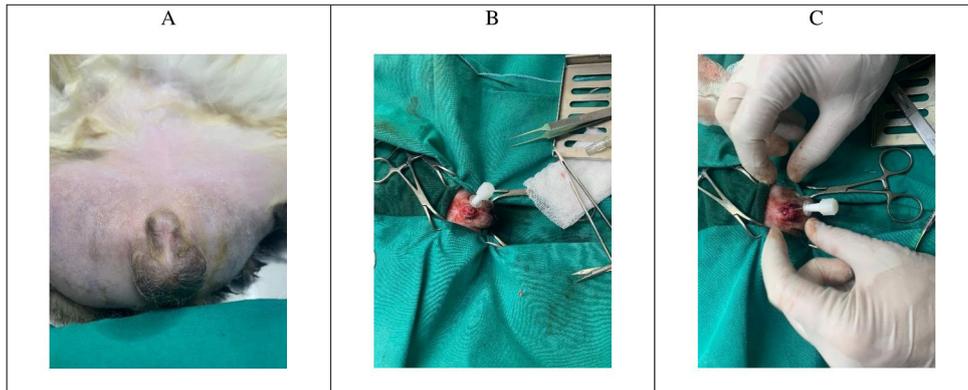
**Figure 1.** Case 1, A: Preoperative view of the stenotic preputial orifice. B: Intraoperative view of the case following the urethral catheterization. C: Postoperative view of the round-shaped incision technique. The penis can easily extrude from the preputial orifice following the surgery. D: Postoperative 10th day of the case before the suture removal. E: Postoperative 60th day of the case.

abnormalities were detected. In the radiographic examination, the urinary bladder was full and tight.

In all of the cases, preputioplasty was performed. Castration was also performed on all cats with the consent of their owners. Procedures were completed without any complications. Normal urination was provided following surgery in all cases. One cat treated with preputioplasty experienced stricture formation. This cat required perineal urethrostomy surgery one month later.

without any suture placement. However, in this method, a limited expansion of the preputial orifice is provided only in the ventral region (May and Hauptman, 2013).

In the current study, no postoperative complications were noted in seven cats. However, in one case, recurrence was observed and a perineal urethrostomy was performed. Similarly, a previous study in kittens has also reported good outcomes following preputial preputioplasty (De Vlaming et al, 2019). Perineal urethrostomy may be also used to treat acquired phimosis, but no superiority has been found in preputioplasty



**Figure 2** Case 3, A: Preoperative view of the stenotic preputial orifice, B: Intraoperative view of the case following the urethral catheterization C: Postoperative view of the round-shaped incision technique. The penis can easily extrude from the preputial orifice following the surgery.

## DISCUSSION

The current study demonstrated that preputioplasty was a rapid and easy procedure for treating acquired phimosis in cats, with no reported postoperative complication except for one cat in the study. Trauma and neoplasia are the main causes leading to acquired phimosis (Meilán, 2006). The reason of phimosis in our cases were unknown, but it may be related to the trauma that causes narrows the preputial orifice. Similar statements have been reported previously (May and Hauptman, 2013; Bright and Mellanby, 2004).

The prepuce is a skin fold that covers the glans and consists of the external lamina (skin) and internal lamina (mucosa). The preputial orifice is developed at the junctional mucocutaneous tissue which marks the boundary between an internal lamina and an external lamina. The preputial orifice allows the extrusion and contraction of the penis (Yoon and Jeong 2013; Kim et al, 2014). Several methods have been reported for the treatment of phimosis in cats. Reported techniques include a wedge-shaped resection technique, releasing incision with sutures placed or no sutures placed technique or a round-shaped resection technique (Yoon & Jeong 2013). A round-shaped resection technique (360° incisions around the preputial orifice) was applied, the technique is based on the principle of increasing the diameter of the orifice by making a wedge-shaped incision at the preputial orifice and removing the scar tissue. Following the incision of the preputial orifice and resection of the tissues, the preputial mucosa is sutured to the ipsilateral skin edge (Bright and Mellanby, 2004). Releasing incision with sutures placed or no sutures placed technique includes a full-thickness skin incision on the ventral preputial region

techniques. On the contrary, perineal urethrostomy is technically more difficult, costly, more invasive and contains a higher risk of postoperative complications (May and Hauptman, 2013; Catriona, 2007).

The major limitations of the current study are small case numbers and retrospective nature. Future studies with larger case numbers are needed to confirm our findings. After this study, it is still unclear whether other treatment methods have a better prognosis than preputioplasty to treat acquired phimosis in cats. Therefore, this can be considered a limitation of the current study.

## CONCLUSION

In conclusion, acquired phimosis occurs in cats, and is easily diagnosed during the physical examination and rapidly treated with preputioplasty. In the current study, preputioplasty was performed successfully in 7 of 8 cats. The outcome of preputioplasty in cats have a good prognosis with minimal postoperative complications.

## DECLARATIONS

### Ethics Approval

Ethics committee approval is not required for this study.

### Conflict of Interest

The authors declare no conflict of interest.

### Consent for Publication

Not applicable

### Author contribution

The idea, conception of the research and design: SO, LEY

Data collection and analysis: SO, LEY, UE, AG, FT, BG

Drafting of the paper: SO, MGŞ

Critical review: AG, LEY

### Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

### Acknowledgements

Not applicable

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