https://dergipark.org.tr/tr/pub/ataunivbd
2021; 16(2): 225-227

Case Report/Olgu Sunumu
DOI: 10.17094/ataunivbd.863467

Atatürk Üniversitesi Veteriner Bilimleri Dergisi
Atatürk University Journal of Veterinary Sciences

The Cystostomy Operation with A New Catheter for Cats: A Case Report

Faina Vladimirovana SHAKIROVA[1a], Nadir KHAOUNI[1b]✉, Bulat TAMIMDAROV[1c], Olga Anatolevna GRACHEVA[1d]

1. Kazan State Academy, Faculty of Veterinary Medicine, Department of Surgery, Kazan, RUSSIA.
ORCID: 0000-0003-4316-2088[a], 0000-0003-4734-6511[b], 0000-0002-0033-1884[c], 0000-0002-6075-1127[d]

Geliş Tarihi/Received	Kabul Tarihi/Accepted	Yayın Tarihi/Published
18.01.2021	04.05.2021	31.10.2021

Bu makaleye atıfta bulunmak için/To cite this article:
Shakirova F,Khaouni N, Tamimdarov B, Gracheva O: The cystostomy operation with a new catheter for cats. Atatürk University J. Vet. Sci., 16(2): 225-227, 2021. DOI: 10.17094/ataunivbd.863467

Abstract: The findings contained in this paper were reached through studying a case of a urinary tract obstruction. These results were used for the evaluation of an innovative veterinary catheter for cystostomy that we have developed for cats. The study was carried out at the research facility in the Department of Surgery, obstetrics and pathology of small animals in Kazan State Academy of Veterinary Medicine named after N.E. Bauman. The subject was a one-year-old male cat suffering from a urinary obstruction. The important symptoms were the lack of urination and hematuria. Diagnosis of the disease was made based on anamnesis and clinical examinations. As complementary tests, ultrasonography besides urine and blood analyses were also done. The confirmed case of obstructive urolithiasis was managed by surgery. The animal was observed over 14 days after the operation. The interpretation of the data resulting from the analysis and the follow-up of the animal's general condition revealed interesting results concerning the absence of postoperative complications and the effectiveness of the new catheter.

Keywords: Catheter, Cats, Cystostomy, Lower Urinary Tract, Urolithiasis.

Kedilerde Yeni Bir Kateterle Yapılan Sistotomi Operasyonu: Bir Olgu Sunumu

Öz: Bu çalışmadaki bulgular bir üriner sistem obstrüksyonu olgusundan elde edilmiştir. Bu sonuçlar kediler için geliştirdiğimiz sistostomi için yenilikçi bir veteriner kateterin değerlendirilmesi için kullanılmıştır. Çalışma N.E. Bauman isimli Kazan Devlet Veteriner Hekimlik Akademisi'nde bulunan Küçük Hayvan Cerrahi, Obstetrik ve Patoloji Departmanında gerçekleştirildi. Çalışma konusu üriner obstrüksiyonu şikayeti olan bir yaşındaki erkek kediydi. Önemli semptomlar; ürinasyon güçlüğü ve hematüriydi. Hastalığın tanısı anamnez ve klinik tetkiklerle konuldu. Tamamlayıcı testler olarak idrar ve kan analizlerinin yanı sıra ultrasonografi yapıldı. Obstruktif ürolitiazis tanısı konulan olgu ameliyatla yönetildi. Hayvan operasyondan sonraki 14 gün boyunca gözlendi. Hayvanın genel durumu ve analizden elde edilen veriler yorumlandığında postoperatif komplikasyonların gelişmediği ve yeni kateterin şaşırtıcı derecede etkili olduğu sonucu ortaya çıktı.

Anahtar Kelimeler: Alt Üriner Sistem, Kateter, Kediler, Sistotomi, Ürolitiazis.

✉Nadir Khaouni
Kazan State Academy, Faculty of Veterinary Medicine, Department of Surgery, Kazan, RUSSIA.
e-mail: nadirkhaouni888@gmail.com

INTRODUCTION

Diseases of the lower urinary tract (LUT) in small animals hold an important position amid non-infectious diseases (1). The frequency of this disease in males prevails over it in females (2), in cats over it in dogs, and most often in animals living indoors (3). Metabolic disorders will lead to the formation and the deposition of urinary stones in different areas of (LUT), most common in the bladder (4-6). Their nature and size are varied and capable of reaching a significant size (7). Urethral obstruction can lead to irreversible kidneys damage, which is subsequently the most common cause of patients' death (8). A large variety of diagnoses (9,10) and treatments can be used (7,10). However, the most rational is the operation.

Temporary cystostomy with the use of catheters is a widely used method to solve the obstructive problem. In this intervention, different types of catheters are usually used, and they might have several complications (11).

CASE REPORT

The study was conducted in Kazan State Academy of Veterinary Medicine, named after N.E. Bauman, Russia. The 1-year-old cat was diagnosed with urolithiasis based on anamnesis, clinical examination, blood and urine analysis in addition to ultrasonographic and bladder histology (Figure 1, 2). The case was managed by a cystostomy, this intervention requires the opening of the abdominal wall that is why performed under general anesthesia using Xylazine (2%) and Zoletil (50 mg/ml). The new catheter was modified to fit on small animals also, it was supplied with a lock to avoid bladder atony, and the connector will allow the wash of the bladder. To insert the catheter into the bladder cavity, we make a hole within 3mm in the bladder wall. The piece we cut down (biopsy) will serve as an extract for histological analyses. To ensure the production of a water-tight seal, purse-string stitches are applied with absorbable multifilament suture material. Further, the bladder is fixed with stay sutures to the abdominal wall to put tension on it; thus, the remaining opening closes by dint of this tension within 18 hours after the fall of the catheter. Because the catheter was sutured with absorbable material, it will fall out approximately on the 14thday, and this period will be enough to eliminate stones (Figure 2). The abdominal wall is sutured with a two-layer suture closure, and intermittently knotted sutures are applied to the skin. Small uroliths and sediment are washed with the urine flow and even eliminated out from the bladder by systemic wash through the catheter. For further treatment, the animal followed a diet (Monge VetSolution Urinary Struvite feed), in addition to subsequent treatment (antibiotics, anti-inflammatory).

Figure 1. [A] Diagram of a prototype of the veterinary catheter. [B] Small fragments of the unilamellar epithelium in separate areas obtained by biopsy. [C] Ultrasonographic image of the bladder.

Şekil 1. [A] Veteriner kateterine ait prototip diyagramı. [B] Biyopside görülen ayrı alanlarda unilamellar epitelinin küçük parçaları. [C] İdrar kesesinin ultrasonografik görüntüsü.

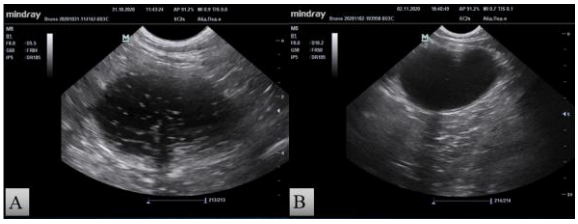

Figure 2. [A] and [B] the urinary bladder of the patient, interval of seven days between the two pictures. [A] Stones and the catheter clearly shown, [B] the elimination of most of the calculi, the catheter remains.

Şekil 2. [A] ve [B] resimleri idrar kesesini göstermektedir ve iki resim arasında yedi gün vardır. [A] Kateter ve taşlar net bir şekilde görülmektedir. [B] Kateterden sonra taşların büyük kısmının bölgede bulunmadığı görülmektedir.

DISCUSSION and CONCLUSION

The main objective of this study is to approve the effectiveness of a new veterinary catheter invented to avoid complications engendered by other interventions used to resolve the urolithiasis problem. Cystostomy must be the solution in the first place since the surgical accesses of other operations destroy the integrity of the genital function (12). Moreover, this technique could be for long-term management (13). The placement of the suggested catheter is done only by purse-string stitches inside the abdominal cavity. In addition, it does not limit the mobility of the animal.

In conclusion, the new catheter is effective and free of early and late postoperative complications. Their most important advantages are the insurance of the outflow of urine, no trauma to the bladder mucous layer, and maintaining the contractility of the bladder.

Conflict of Interest

The authors declare that they have no conflict of interest.

REFERENCES

1. Piyarungsri K., Tangtrongsup S., Thitaram N., Lekklar P., Kittinuntasilp A., 2020. Prevalence and risk factors of feline lower urinary tract disease in Chiang Mai, Thailand. Sci Rep, 10, 1-8.
2. Lew-Kojrys S., Mikulska-Skupien E., Snarska A., Krystkiewicz W., Pomianowski A., 2017. Evaluation of clinical signs and causes of lower urinary tract disease in Polish cats. Vet Med, 62, 386-393.
3. Hostutler R., Chew D., DiBartola S., 2005. Recent concepts in feline lower urinary tract disease. Vet Clin North Am Small Anim Pract, 35, 147-170.
4. Gomes V., Ariza P., Borges N., Schulz F., Fioravanti M., 2018. Risk factors associated with feline urolithiasis. Vet Res Commun, 42, 87-94.
5. Remichi H., Hani F., Rebouh M., Benmohand C., Zenad W., Boudjellaba S., 2020. Lower urinary tract lithiasis of cats in Algeria: Clinical and epidemiologic features. Vet World, 13, 563-569.
6. Grauer GF., 2015. Feline struvite & calcium oxalate urolithiasis. TVP, 5, 14-20.
7. Tion M., Dvorska J., Saganuwan S., 2015. A review on urolithiasis in dogs and cats. Bulg J Vet Med, 18, 1-18.
8. Chen H., Avital Y., Bruchim Y., Aroch I., Segev G., 2019. Urinary heat shock protein-72: A novel marker of acute kidney injury and chronic kidney disease in cats. Vet J, 243, 77-81.
9. Apaydin N., Ermin H., 2018. Dişi köpeklerde idrar kesesi hastalıklarının radyografik, ultrasonografik ve endoskopik yöntemlerle belirlenmesi. Atatürk Üniversitesi Vet Bil Derg, 13, 317-325.
10. Kamiloğlu A., 2017. Kedilerde alt üriner sistem ürolitiyazisinin klinik, laboratuvar, radyografik, ultrasonografik tanısı ve cerrahi sağaltım: çalışma on kedi üzerinde yapıldı. Atatürk Üniversitesi Vet Bil Derg, 12, 14-21.
11. Koba I.S., Lifentsova M., Novikova E.N., Glushchenko S.G., 2018. Analysis of the manifestations of urolithiasis in cats. Polythematic network electronic scientific journal of the Kuban State Agrarian University (135), 147-157.
12. Mangotra V., Singh K., Proch A., 2017. Tube cystostomy in male buffalo calves (bubalus bubalis) suffering from retention of urine. J Anim Res, 7, 279-291.
13. Cornell K., 2000. Cystotomy, partial cystectomy, and tube cystostomy. Clin Tech Small Anim Pract, 15, 11-16.