



# Successful treatment of a urinary foreign body by cystotomy in a cat

Basak Boztok Ozgermen<sup>1\*</sup> ; Nihan Avci<sup>1</sup>

<sup>1</sup>Aksaray University, Faculty of Veterinary Medicine, Department of Surgical, Aksaray, Turquía.

\*Correspondence: [basak1607@gmail.com](mailto:basak1607@gmail.com)

Received: Marz 2021; Accepted: December 2021; Published: May 2022.

## ABSTRACT

**Objective.** The aim of this study is to present the diagnosis and treatment methods of a cat with hematuria and strangury which was diagnosed with a foreign body within the urinary bladder. **Materials and Methods.** A 1-year-old, mixed breed, neutered male cat was presented with pollakiuria and hematuria. The abdominal examination revealed a contractile and painful urinary bladder. **Results.** The abdominal ultrasonographic examination demonstrated a linear foreign body (urinary catheter) in the bladder lumen. A standard midline cystotomy was made and a 6 cm long urinary catheter was removed from the bladder. The cat recovered uneventfully. The presence of foreign bodies in the urinary bladder is rare in veterinary practice. **Conclusions.** Ultrasonographic examination of the urinary bladder gives valuable information on the foreign body-related cystitis in cats.

**Keywords:** Cats; FLUTD; urinary bladder; foreign bodies; cystotomy (*Source: DeCS*)

## RESUMEN

**Objetivo.** El objetivo de este estudio fue presentar los métodos de diagnóstico y tratamiento de un gato con hematuria y estranguria al que se le diagnosticó un cuerpo extraño dentro de la vejiga urinaria. **Materiales y métodos.** Un gato macho castrado de raza mixta de 1 año de edad se presentó con polaquiuria y hematuria. El examen abdominal reveló una vejiga urinaria contráctil y dolorosa. **Resultados.** El examen ecográfico abdominal demostró un cuerpo extraño lineal (sonda urinaria) en la luz de la vejiga. Se realizó una cistotomía de línea media estándar y se extrajo un catéter urinario de 6 cm de largo de la vejiga. El gato se recuperó sin problemas. La presencia de cuerpos extraños en la vejiga urinaria es rara en la práctica veterinaria. **Conclusiones.** El examen ecográfico de la vejiga urinaria proporciona información valiosa sobre la cistitis relacionada con cuerpos extraños en los gatos.

**Palabras clave:** Gatos; FLUTD; vejiga urinaria; cuerpos extraños; cistotomía (*Fuente: DeCS*)

### How to cite (Vancouver).

Boztok-Ozgermen B, Eroglu N. Successful treatment of a urinary foreign body by cystotomy in a cat. Rev MVZ Cordoba. 2022; 27(2):e2346. <https://doi.org/10.21897/rmvz.2346>



©The Author(s) 2022. This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<https://creativecommons.org/licenses/by-nc-sa/4.0/>), lets others remix, tweak, and build upon your work non-commercially, as long as they credit you and license their new creations under the identical terms.

## INTRODUCTION

Feline lower urinary tract disease (FLUTD) is a general term used to describe disorders in the urinary bladder or urinary tract resulting in dysuria, hematuria, pollakiuria, partial or total urethral obstruction (1,2). It can be formed due to idiopathic cystitis, bacterial infection, urolithiasis, trauma, neoplasms, and subclinical urinary anomalies (1). Neuter status, diet, insufficient water consumption, and obesity are among the important factors affecting FLUTD formation (2). Pollakiuria, dysuria, strangury, macroscopic or microscopic hematuria can be observed as clinical symptoms in cats with urinary tract disease (3). Infectious and non-infectious factors may cause bladder inflammation (2,3). Foreign body, drugs, chemicals, autoimmune causes, or idiopathic cystitis are among the non-infectious causes (3). Besides, genetic factors, diet, urethral catheterization, trauma, stress, obesity, inactivity, glycosaminoglycan deficiency can also cause lower urinary tract diseases (2,3).

Imaging methods as ultrasonography, radiography, cystography, and cystoscopy are used for the diagnosis of lower urinary tract diseases (1,4,5). During abdominal ultrasonography, the thickness of the bladder wall, urolithiasis, intravesical blood clots, ruptures, neoplasms, and diverticula can be examined in detail (4,5).

The presence of foreign bodies in the urinary bladder is common in human medicine but very rare in veterinary medicine (1). Foreign bodies in the urinary bladder can be due to iatrogenic origin, retrograde catheterization, perforation, and migration caused by foreign bodies in other organs. Surgical materials used after the urogynecological intervention, intrauterine devices, pen, battery, cable, and foreign bodies such as hair are some of the interesting foreign bodies reported in human medicine. The most encountered foreign bodies in the urinary bladder are lead and urinary catheters in veterinary medicine (3, 6).

In this study, we presented the diagnosis and treatment methods of a cat with hematuria and strangury which was diagnosed with a foreign body within the urinary bladder.

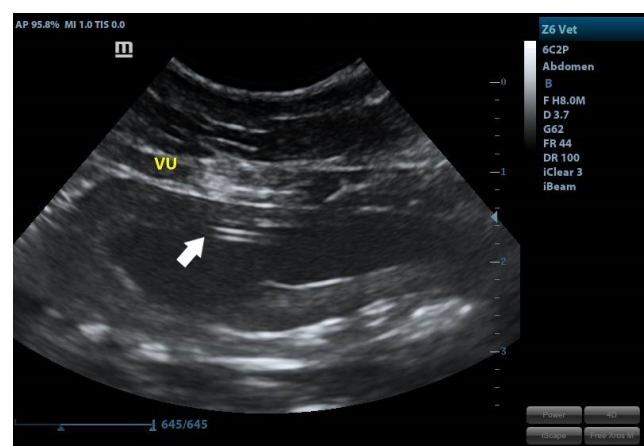
**Anamnesis.** A 1-year-old, mixed breed, neutered male cat was admitted to Aksaray

University Veterinary Faculty Animal Hospital Surgery Clinics with the complaint of decreased urination and presence of blood in the urine.

According to the anamnesis, he was treated for cystitis due to struvite crystals, in a veterinary clinic a month ago. In this previous treatment, a catheter was placed in the bladder and the bladder lavage was made by using hypochlorous acid and the catheter was sutured to the skin. Following this, the patient was administered 15 mg/kg of amoxicillin-clavulanic acid (Synulox, Zoetis, USA) for 5 days. During the treatment, the owner did not use the Elizabeth collar properly on the cat and the patient removed the catheter after 3 days. The owners reported that the complaints were reduced for a while but then the symptoms reoccurred.

**Clinical Exam Findings.** As a result of the physical examination performed in our clinic, the urinary bladder was found to be contractile and painful and the cat was otherwise healthy.

**Diagnostic Aids.** During the routine abdominal ultrasonographic examination, it was observed that the kidneys were in normal size and appearance. No urine crystals or urolith was found in the lumen of the urinary bladder, but a thickening of the bladder wall was significant. In the bladder lumen, a linear foreign body was found in the form of two parallel hyperechoic lines and an anechoic space in the middle (Figure 1).



**Figure 1.** The foreign body (urinary catheter) in the form of two parallel hyperechoic lines and an anechoic space in the middle was found in the bladder lumen (White arrow).

**Treatment Approach.** Considering that this might be the urinary catheter applied to the patient during the previous treatment, a cystotomy operation was decided. General anesthesia was achieved using Xylazine (2.2 mg/kg, IM) and Ketamine HCl (11 mg/kg, IM). As a pre-operative antibiotic, cephazoline sodium (25 mg/kg) was administered intravenously. Throughout the operation, a 0.9% NaCl solution was administered to the patient. The patient was placed on dorsal recumbency and prepared for routine aseptic surgery by clipping the hairs around the surgical site. The site was scrubbed with benzalkonium chloride 20% and povidone iodine then rinsed with alcohol. A standard median laparotomy and abdominal exploration was performed. The urinary bladder was derivated by a sterile injector, and bladder wall fixation sutures were placed. The dorsal approach was not possible because the urinary bladder was firmly adherent to the surrounding tissues, so a ventral incision was made. The lumen was examined and a 6 cm long urinary catheter was removed from the bladder (Figure 2). A Schmieden and Lembert suture was performed using polydioxanone 4/0 thread (PDS II®, Ethicon, Norderstedt, Germany). The sutures were checked for any possible urine leakage and the abdomen was closed with routine methods. A retrograde urinary catheter was placed and sutured on the skin. Enrofloxacin (Baytril 5%, Bayer, Leverkusen, Germany, 5 mg/kg, IM) and meloxicam (Metacam, Boehringer Ingelheim Vetmedica, St Joseph, USA, 0.3 mg/kg, SC) was administered to the patient for a week. The cat was fed with prescription diet food (Royal Canine Urinary s/o®) in the post-operative period. The urinary catheter was removed on the postoperative 3rd day. On the 10th day, the laparotomy line healed smoothly and the sutures were removed. No further clinical finding was found in the patient during routine controls and the patient was recovered uneventfully.



**Figure 2.** A 6-cm-long foreign body (urinary catheter) in the bladder lumen observed after cystotomy.

## DISCUSSION

Cystitis is one of the most common urinary tract diseases in cats (3,7,8). The clinical findings in cats with FLUTD are generally strangury, pollakiuria, and hematuria (2, 7, 8). According to the literature, 55-69% of cats with FLUTD suffer from feline idiopathic cystitis (FIC), while 12-22% of affected cats have urolithiasis (8). Studies have reported that the risk of FLUTD and FIC is higher in middle-aged cats, and the risk is increased in male cats and overweight cats (7). It has been demonstrated that male cats are more likely to be diagnosed with FIC than females (7). Our case was also a male neutered cat, but contrary to the literature, our case was a young patient at the age of one.

It is very important to examine the urine and bladder in cats with symptoms of urinary tract diseases such as hematuria and strangury (2). It is important to know the underlying cause of FLUTD as it has no specific clinical symptoms. In addition to anamnesis, abdominal palpation, urine analysis, hematological tests, cystoscopy, ultrasonography, and radiography play an important role in diagnosis (5,9).

Recurrence of FLUTD is common. It has been reported that 39-65% of cats are re-affected by this disease within 1-2 years after the onset of the disease (2). A detailed evaluation is important for the diagnosis and treatment of recurrent urinary system diseases (2,8). Ultrasonography, urography, cystoscopy and computed tomography can be used for diagnosis (5). In addition to recognizing foreign bodies, renal pathologies, polyps, crystals, or uroliths that cannot be diagnosed on radiography can be detected more easily by an ultrasonographic examination. In our case, the diagnosis of the patient was made by ultrasonography.

Foreign bodies in the urinary bladder are very rare in veterinary medicine (4). In studies conducted on cats and dogs, some foreign objects such as lead, hair, needle, mouse barley awn, and urinary catheter were found in the bladder (3,6,10). Foreign bodies can reach the urinary bladder through iatrogenic, retrograde, transabdominal, or trans-vesical routes (3,10). In our case, a catheter was inserted to the urinary bladder by retrograde route; however, since the cat was not worn with an Elizabeth collar, the patient chewed the skin sutures and ripped the catheter's outer part. As the patient owners did not notice this situation for a long time, inflammation of the bladder wall and chronic cystitis occurred due to the irritation caused by the foreign body.

Prasetyo and Darmono (11) stated that in cases such as cystitis, hematuria, and crystallization, it is important to catheterize the urinary bladder and lavage it with pressure. They also reported that bladder lavage must be performed until the urine returns to its normal color and the treatment must be continued by using a prescription diet food (Royal Canine Urinary s / o®) (11).

Crystallization and urolith formations can damage the urinary bladder wall and cause various clinical symptoms such as pain and

bleeding (7). This damage and inflammation make the bladder vulnerable to bacterial infection (1). In such cases, antibiotic treatment plays an important role. Prasetyo and Darmono (11) preferred a doxycycline group of antibiotics in their study (11). In another study, *Enterobacter* spp. was detected as a result of bacterial culture identification and amoxicillin-clavulanic acid 15 mg/kg was administered intravenously twice a day. Also, amikacin sulfate (10 mg/kg) was used as a subcutaneous injection once a day for prophylaxis (3). Enrofloxacin has a strong bactericidal effect. It is preferred primarily in the treatment of pyelonephritis (1). In our case, since amoxicillin / clavulanic acid was used in the stage of acute cystitis, enrofloxacin was preferred to effect both gram-positive and gram-negative bacteria.

In conclusion, in veterinary medicine, patient owners play an important role in the patient's treatment process. The most important feature in our case is that the Elizabeth collar was not applied correctly to the patient. The owner was not aware of whether the patient removed the entire catheter or not.

As a result, urinary tract diseases such as urolithiasis and idiopathic cystitis are frequently encountered in cats. Elizabeth collars must be used in patients with urinary catheters. During the treatment, the owners should be informed and make sure that the collar is used correctly. In cases where the patient removes the urinary catheter as a result of not using a collar, an ultrasonographic examination of the urinary bladder should be performed, considering that a part of the catheter may be left inside the lumen.

### Conflict of interests

The authors declare no conflict of interest with publication of this manuscript.

## REFERENCES

1. Buffington T, Chew DJ. Management of non-obstructive idiopathic/interstitial cystitis in cats. In: Elliott J., Grauer G. F. and Westropp J. L. (editors). BSAVA Manual of Canine and Feline Nephrology and Urology, 3<sup>rd</sup> ed., Cambrian Printers: Aberystwyth, UK; 2017.
2. Lund HS, Eggertsdóttir AV. Recurrent episodes of feline lower urinary tract disease with different causes: possible clinical implications. J Feline Med Surg. 2019; 21(6):590–594. <https://doi.org/10.1177/1098612X18783839>.
3. Sunghan J, Khantaprab N, Thongtharb A. Bullet-induced chronic cystitis in cat. Turkish J Vet Anim Sci. 2020; 44:469–472. <https://doi.org/10.3906/vet-1912-1>
4. Léveillé R. Ultrasonography of urinary bladder disorders. Vet Clin North Am Small Anim Pract. 1998; 28(4):799–821. [https://doi.org/10.1016/S0195-5616\(98\)50079-4](https://doi.org/10.1016/S0195-5616(98)50079-4)
5. Ergin İ, Şen Y, Şenel OO, Özgermen DB, Bumin A. Radiological and ultrasonographical evaluation of lower urinary tract diseases in cats. Ankara Univ Vet Fak Derg. 2018; 65:73–78. <https://vetjournal.ankara.edu.tr/tr/download/article-file/647200>
6. Mishra M, Dipanshu Bisht A, Maiti SK. Successful surgical retrieval of a urinary foreign body by cystotomy in labrador retriever dog: a case report. Int J Curr Microbiol Appl Sci. 2020; 9(4):1300–1303. <https://doi.org/10.20546/ijcmas.2020.904.153>
7. Kim Y, Kim H, Pfeiffer D, Brodbelt D. Epidemiological study of feline idiopathic cystitis in Seoul, South Korea. J Feline Med Surg. 2018; 20(10):913–921. <https://doi.org/10.1177/1098612X17734067>
8. Kaul E, Hartmann K, Reese S, Dorsch R. Recurrence rate and long-term course of cats with feline lower urinary tract disease. J Feline Med Surg. 2020; 22(6):544–556. <https://doi.org/10.1177/1098612X19862887>
9. Albasan H, Osborne CA, Lulich JP, Lekcharoensuk C. Risk factors for urate uroliths in cats. JAVMA. 2012; 240(7):842–847. <https://doi.org/10.2460/javma.240.7.842>
10. Del Angel-Caraza J, Pérez-García CC, Bende B, Díez-Prieto I, García-Rodríguez B. Mouse barley awn (*Hordeum murinum*) migration induced cystolithiasis in 2 male dogs. Can Vet J. 2011; 52(1):67–69. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3003579/>
11. Prasetyo D, Darmono GE. Feline cystitis in himalayan cat: a case report. AHSR. 2018; 5:286–290. <https://doi.org/10.2991/icoh-17.2018.57>