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CASE REPORT

A case of surgical treatment of Type 2 Atresia Ani and Rectovaginal Fistula in a Kitten

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ABSTRACT

Congenital type 2 atresia ani, accompanied by a rectovaginal fistula, is a rare condition in cats that forms an abnormal connection between the rectum and vagina. This case presentation involves a 4-week-old female British Shorthair kitten brought to Istanbul University Cerrahpasa Faculty of Veterinary Medicine Hospital Surgical Clinics with complaints of congenital type 2 atresia ani and the accompanying rectovaginal fistula. The owners of the kitten sought veterinary care due to difficulties with defecation since birth. Upon clinical examination, the absence of an anal opening and contamination of the vulvar cavity with feces were observed. Contrast X-ray confirming that the anus was closed and surgery was decided. During the surgery, anal sphincters were preserved, and a "+" shaped incision was made in the anus to reach the rectum. The rectum was separated from the vaginal connection, and the fistula was closed. The kitten recovered smoothly and, during a one-year follow-up, was able to defecate normally by going to the litter box on its own. This case presentation highlights the importance of surgical interventions in the diagnosis and treatment of atresia ani and rectovaginal fistula.

Keywords: Atresia ani, Congenital anomaly, Kitten, Pseudohermaphroditism, Rectovaginal fistula

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Bir Yavru Kedide Tip 2 Atresia Ani ve Rectovajinal Fistülün Cerrahi Tedavisi Olgusu

ÖZ

Rektovajinal fistülün eşlik ettiği konjenital tip 2 atresia ani, kedilerde rektum ve vajina arasında anormal bir bağlantı oluşturan nadir bir durumdur. Bu olgu sunumunda konjenital tip 2 atresia ani ve eşlik eden rektovajinal fistül şikayeti ile İstanbul Üniversitesi Cerrahpaşa Veteriner Fakültesi Hastanesi Cerrahi Klinikleri'ne getirilen 4 haftalık dişi British Shorthair yavru kedi olgusunu içermektedir. Yavru kedinin sahipleri, doğumdan itibaren dışkılama güçlüğü nedeniyle kliniğimize başvurdu. Klinik muayenede anal açıklığın olmadığı ve vulvar kavitenin dışkı ile kontamine olduğu görüldü. Anüsün kapalı olduğunu teyit eden kontrastlı grafi çekildi ve ameliyat kararı verildi. Ameliyat sırasında anal sfinkterler korundu ve rektuma ulaşmak için anüste "+" şeklinde bir kesi yapıldı. Rektum vajinal bağlantıdan ayrıldı ve fistül kapatıldı. Yavru kedi sorunsuz bir şekilde iyileşti ve bir yıllık takipte kendi başına kum kabına giderek normal bir şekilde dışkıladığı görüldü. Bu olgu sunumu, atresia ani ve rektovajinal fistülün tanı ve tedavisinde cerrahi girişimlerin önemini vurgulamaktadır.

Anahtar Kelimeler: Atresia ani, Kongenital anomali, Pseudohermafroditizm, Rektovajinal fistül, Yavru kedi

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INTRODUCTION

Congenital anorectal malformations are infrequent in young dogs and cats. The most prevalent type is anorectal atresia, which may also be linked to rectovaginal or rectourethral fistula. These malformations arise during the embryonic development of the cloacal region (Kurt et al., 2022; Pourrseza et al., 2023). Four types of anorectal atresia have been documented. Type 1 is characterized by congenital anal stenosis and represents the mildest form. Type 2 is referred to as imperforate anus, where the rectum may form a blind pouch and the anus remains undeveloped. In Type 3, the proximal rectum culminates in a cranial blind pouch, and the anus is undeveloped. Type 4 involves the proximal rectum terminating in a cranial blind pouch, but the anus forms normally (Aslan et al., 2009; Tomsa et al., 2011). Occasionally, rectovaginal fistula can develop in dogs and, rarely, in cats with Type 2 anorectal atresia, as well as in cats with Type 3 anorectal atresia (Jardel et al., 2013; Choi et al., 2022; Pourrseza et al., 2023).

Symptoms observed in cases of anorectal atresia vary depending on its severity and may include abdominal pain, abdominal distension, tenesmus, reduced defecation, cystitis, and growth retardation (Tomsa et al., 2011). Additionally, in females with concurrent rectovaginal fistula, feces might be expelled through the vulva (Ellison et al., 2012). In the early stages, the condition may go unnoticed due to the mother cat's regular cleaning of the kitten's perineum (Kurt and Turan, 2021). However, the transition from a liquid diet provided by the mother's milk to a solid diet after weaning can exacerbate clinical symptoms. While liquid diets facilitate the passage of stools, a switch to solid food may lead to constipation and tenesmus (Rahal et al., 2007). Consequently, anorectal atresia often remains undetected until tenesmus and abdominal distension become prominent or until the patient is weaned off milk (Ellison et al., 2012).

According to veterinary literature, female animals are the most commonly affected by anorectal atresia (Ellison et al., 2012). Anesthesia and surgery can become more challenging depending on the overall condition, age, and size of the patient. Due to the low incidence of anorectal atresia in cats, there are only a few reported cases in the literature. Some affected cats are euthanized early based on the belief that surgical correction would not yield significant benefits (Choi et al., 2022). Consequently, the true prevalence remains unknown, as euthanasia is often performed on many animals (Mahler and Williams, 2005). The primary goals of surgery are to restore anorectal continuity, preserve the external anal sphincter, restore normal colon function, and eliminate the rectum-vagina connection (Pourrseza et al., 2023). However, further publications are needed to assist in surgical planning, provide recommendations, and predict the disease prognosis (Ellison et al., 2012; Choi et al., 2022). Vaginography and fistulography examinations can aid in a detailed diagnosis by administering contrast material through the vagina or fistula pathway (Choi et al., 2022)

The perineal approach is utilized for the surgical correction of type 1, type 2, and type 3 anorectal atresia. Surgical intervention should be performed before the development of conditions such as megacolon, urinary tract infections, and chronic abdominal distension (tension, swelling). Despite the possibility of surgical treatment for anorectal atresia, the prognosis is generally unfavorable due to the young age, small size, and typically poor body condition of affected animals, leading to a higher mortality rate (Kim et al., 2013).

CASE REPORT

An informative note was provided regarding a 4-week-old, 500-gram female Scottish Fold kitten case brought to Istanbul University-Cerrahpaşa Hospital Clinic. In the medical history, it was mentioned that the kitten is smaller compared to its siblings, the anus is contaminated with feces, and there is abdominal swelling. During the clinical examination, it was observed that the anus is completely closed (Figure 1.), and the feces are coming from the vagina. Additionally, a pseudoscrotum-like structure was detected around the vulva. The patient's anal reflex was found to be normal.

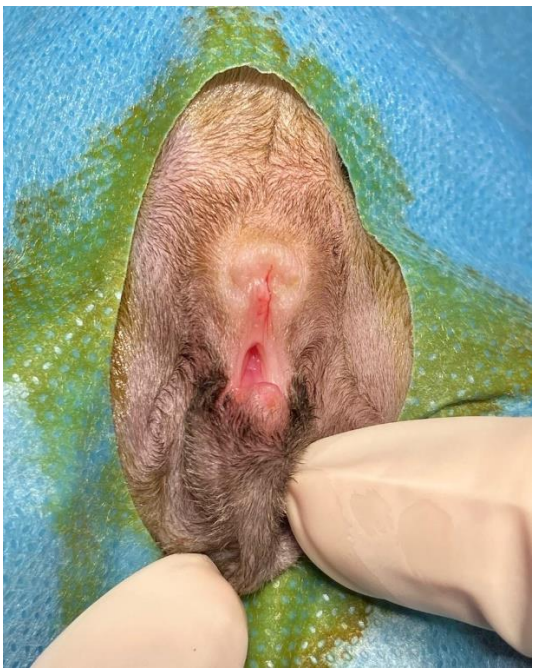

Figure 1: The image shows a penis and scrotum-like structure under the vulva.

When iohexol (Omnipaque, Nycomed Ireland Ltd, Cork, Ireland), a contrast agent for radiographic examination, was administered through the rectum with an injector, it was observed that the contrast agent progressed through the rectum (Figure 2.). The patient was diagnosed with type 2 anorectal atresia and rectovaginal fistula. Accordingly, blood analysis was conducted, and an operation plan was made.

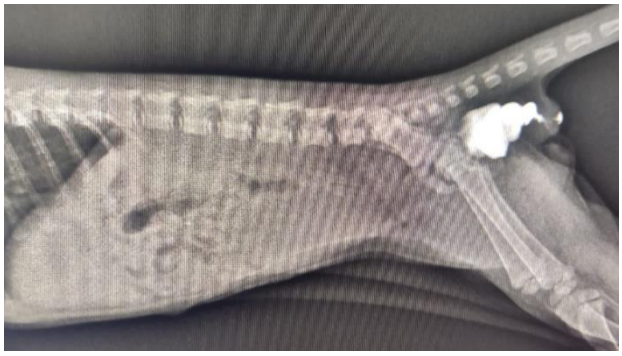

Figure 2: X-ray image after contrast agent administration.

The patient was induced under anesthesia with 6-8 mg/kg propofol (Propofol-PF 1%, Polifarma, İstanbul, Turkey). Intubation was performed using a size 2 cuffed endotracheal tube. Subsequently, anesthesia was maintained with 100% oxygen and isoflurane (Forane, Abbott, Latina, Italy). The patient received an intravenous dose of 30 mg/kg ceftriaxone (Novosef, Sanofi, İstanbul, Turkey) and a subcutaneous dose of 0.2 mg/kg meloxicam (Melox, Nobel Limited, İstanbul, Turkey). During the operation, a continuous intravenous infusion of 10 ml/kg/h of 0.9% NaCl solution (Poliflex Polifarma, İstanbul, Turkey) was administered.

The patient was placed in a sternal position on the surgical table. A support was placed underneath to slightly elevate the anus. The patient's urinary tract was catheterised. After ensuring asepsis and antisepsis of the surgical site, a plus-shaped incision was made around the anus to reach the rectum. During the dissection, extra care was taken to preserve the external anal sphincter and the anal sacs. The rectum and rectovaginal fistula were identified. The connection between the rectum and vagina was separated, and a 4/0 polydioxanone suture(Neoxone, Setpa, İzmir, Turkey) was used to suture the upper wall of the vagina. The rectum was pulled outward and detached from its connection with the vagina. The fistula was sutured separately with simple interrupted stitches. Subsequently, the rectum was approximated to the anal region using a 4/0 polypropylene suture (Neoplene, Setpa, İzmir, Turkey) (Figure 3.)

After surgery, the patient was recommended a soft diet and advised to avoid milk. Oral amoxicillin (Amoklavin, Deva, İstanbul, Turkey), was prescribed at a dose of 12.5 mg/kg for one week. Daily cleaning with hypochlorous acid (Crystalin, NHP, İzmir, Turkey) was recommended. Regular communication was established to obtain updates on the patient's bowel movements and to gather consistent information.

At the patient's follow-up visit after 4 days, it was learned from the provided history that the patient had experienced fecal incontinence. Subsequent follow-up was conducted over the phone, and it was revealed that after 1 month, the patient was able to control their bowel movements and used her litter box for defecation (Figure 4.)

Figure 3: Urinary catheter is shown with arrow. The image includes step-by-step surgery images.

Figure 4: Self-defecation of the patient in the litter box one month after the operation.

DISCUSSION

Atresia ani is a result of a defect that occurs during the embryonic differentiation of the cloaca and has been reported to be present in all domestic animals (Adewunmi et al., 2007). The rectovaginal fistula serves as a common opening for both the urogenital system and the gastrointestinal tract (Rahal et al., 2007). With the exception of type 1 anorectal atresia, surgery remains the sole treatment option for this condition. However, surgical intervention can be challenging due to the young age and generally poor physical condition of the patients, leading to potential functional complications (Mahler and Williams, 2005). Anatomic typing should be performed to customize the treatment approach for each case (Pourrseza et al., 2023). It has been reported that untreated cases of type 2 anorectal atresia with rectovaginal fistula may lead to secondary complications such as megacolon, upper urinary tract infections, and kidney damage. Therefore, surgical treatment is necessary to correct this congenital anomaly (Jardel et al., 2013).

Postoperative complications following surgical correction, regardless of the anatomical type, may involve fecal incontinence due to the congenital absence of the anal sphincter or damage to its innervation during dissection (Pourrseza et al., 2023). Additionally, excessive tissue damage during surgery can result in the formation of scar tissue and narrowing of the passage (Choi et al., 2022). Furthermore, wound dehiscence and infection are potential complications that can be observed after the operation (Jardel et al., 2013). In our case, wound dehiscence was observed one week after the surgery, and successful healing was achieved with area cleaning and routine wound treatment.

In the treatment of rectovaginal fistula and anorectal atresia, two commonly used surgical techniques are reported in the literature. In one approach, the fistula is isolated, transected, and the rectal and vulvar defects are closed separately, followed by anal reconstruction. The other technique involves excising the affected segment by cutting from the cranial end of the fistulous opening, and then suturing the distal part of the rectum to the anus (Rahal et al., 2007). Experimental treatments for induced rectovaginal fistula have involved closure along its length with multiple purse-string sutures and the use of adhesive material (Rahal et al., 2007). Additionally, Jardel et al. conducted a study where they reported that the use of fistula flap in the surgical treatment of rectovaginal a fistula was curative.

Beneficially, patients with congenital anomalies such as anorectal atresia should be thoroughly investigated for any associated abnormalities. The literature reports cases where hydrocephalus, sacrococcygeal dysgenesis, and tail agenesis have been observed concurrently with anorectal atresia (Sedigh et al., 2010; Jardel et al., 2013). In our case, we observed the presence of a scrotal-like structure in the perineal region. It was learned that the patient was able to go to the sand and defecate on her own and did not

experience any difficulties in her one-year follow-up by phone after the operation.

Hermafroditism is a condition where individuals possess both female and male reproductive organs, and concurrently, structures characteristic of both genders are found in the genital tracts and external genital organs. Pseudohermaphroditism, also known as false hermafroditism, describes situations where the phenotypic gender characteristics do not align with the actual reproductive organs an individual possesses (Baki Acar, 2016). In our case presentation, the cat exhibited a structure resembling a clitoris and a vagina, yet two structures akin to testes were also observed. Due to the cat's age at the time of surgery and the limited information obtained during the recovery process, a definitive diagnosis could not be made, leading to the assumption that the case might be an instance of pseudohermaphroditism. Following a recent phone conversation, based on limited photographs and information provided, it was determined that the cat currently has two testicular sacs; one containing a testis while the other is empty (Figure 5). In line with recommendations from a previously published similar study, a histopathological examination of the gonads and an analysis of the chromosomal structure were suggested (Vallefuoco et al., 2013). However, the financial constraints of the pet owner prevented these examinations from being conducted.

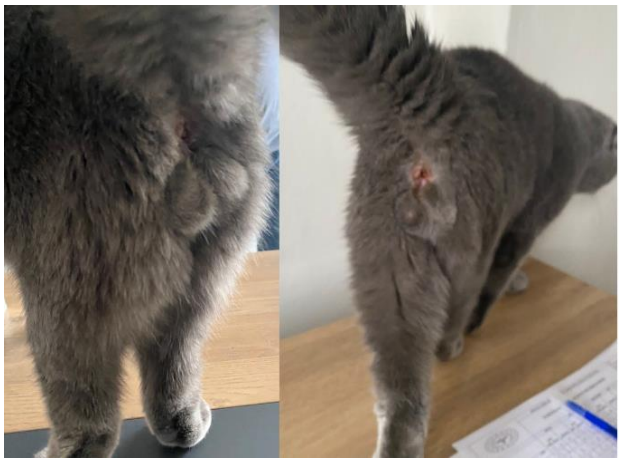

Figure 5: Recent testicular images obtained from the pet owner.

CONCLUSION

As a result, atresia ani is a rare condition in cats and can be successfully treated with surgical intervention. In this case, it was observed that the patient was able to defecate on their own without damaging the anal sphincter, thus proving the success of the surgical intervention.

Conflict of interest: The authors have no conflicts of interest to report.

Ethical approval: This study is not subject to the permission of HADYEK in accordance with the "Regulation on Working Procedures and Principles of Animal Experiments Ethics Committees" 8 (k). The data, information and documents presented in this article were obtained within the framework of academic and ethical rules."

Authors' Contributions: All authors have read and approved the finalized manuscript. All authors have read and approved the finalized manuscript.

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