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Case Report

Tube-like preputial mucosa urethrostomy for correction of urethrorectal fistula in a young male cat

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Abstract

A 10-month-old cat presented with a history of persistent dysuria, aberrant urination, with urine leaving only from the rectum during micturition. Voiding cystourethrography was performed to identify pelvic urethra opening into the rectum and penile urethra obstruction. Pubic osteotomy was the method used to approach the fistula and locate the pelvic urethra opening into the rectum. Surgical correction consisted of ligation and cutting of the urethra connecting to the rectum, and a primary suture to connect the urethra to the prepuce for a new opening. A tomcat catheter was placed in the urethra for ten days. Ten days after surgery, the retrograde cystography was done and the imaging diagnosis could not see the leakage of urine. After catheter removal, the cat could urinate normally, and there were no signs of complications during urination, with no urine observed coming from the rectum. One month post-operation, no urination abnormality was observed during follow up examination. In brief, this case report describes successful urethral reconstruction for repairing the urethrorectal fistula by primary suture connecting the urethra with prepuce mucosa.

Keywords: Cat, Preputial mucosal, Urethrostomy, Urethrorectal fistula

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INTRODUCTION

Urethrectal fistulas have been reported in dogs and cats; the condition can be congenital or acquired (Agut et al., 2006). Congenital urethrectal fistulas are usually associated with other anorectal abnormalities. Acquired fistulas might be the result of trauma, surgery, infection, or neoplasia (Al-Ali et al., 1997). The typical clinical signs described are dribbling or leakage of urine from the rectum, or urine passing from both the urethra and anus during micturition (Goulden et al., 1973; Osuna and Metcalf, 1989). Recurrent urinary tract infections, pollakiuria, and hematuria have been reported (Goulden et al., 1973; Miller, 1980; Osuna and Metcalf, 1989). Perianal dermatitis may also be present (Agut et al., 2006; Goulden et al., 1973). Diagnosis is typically made by the observation of urine dribbling from the anus. It can be confirmed by observation of the fistula with use of positive contrast cystourethrography (Goulden et al., 1973; Miller, 1980; Osborne et al., 1975; Osuna and Metcalf, 1989; Whitney and Schrader, 1988).

The purpose of this case report is to demonstrate the successful treatment outcome in one cat with urethrectal fistula using the tube-like preputial mucosa as a new urethral opening translocated from the rectum.

HISTORY, CLINICAL DIAGNOSIS and FINDINGS

A 3.9 kg, 10-month-old, domestic short-haired male cat, was brought to have an evaluation of urine coming from the rectum. On physical examination, a cat showed no sign of urinary bladder distention on abdominal palpation. Thus, a blood sample was collected to examine complete blood count, which identified mild thrombocytopenia. Blood urea nitrogen (BUN) was 51.1 mg/dL [normal range: 16-36 mg/dL, (IDEXX Catalyst Chemistry Analyzer)], creatinine was 1.92 mg/dL [normal range: 0.8-2.4 mg/dL, (IDEXX Catalyst Chemistry Analyzer)], and Symmetric dimethylarginine (SDMA) test was 11 µ/dL [normal range: less than 14 µ/dL, (IDEXX Catalyst Chemistry Analyzer)]. Cystocentesis was performed and later sent for bacterial culture, there was no growth of bacteria. However, a digital rectal examination revealed a depressed region in the ventral surface of the rectum, approximately 1 cm, cranial to the anus; the result of the abdominal radiograph was normal. Next, cystourethrography was performed by using iohexol (A. Menarini, Thailand); 5 mL/kg bodyweight injected percutaneously into the bladder because the catheter was not able to be inserted into the urethra due to most part of penile urethra obstruction. Later, the bladder was expressed manually to simulate voiding for radiography. Radiography showed contrast medium passing from the bladder into the intra-pelvic urethra at the level of the pubic arch, which then passed into the rectum (Figure 1A). Based on these test findings, the diagnosis was urethrectal caused by the pelvic urethra opening into the rectum and penile urethra obstruction.

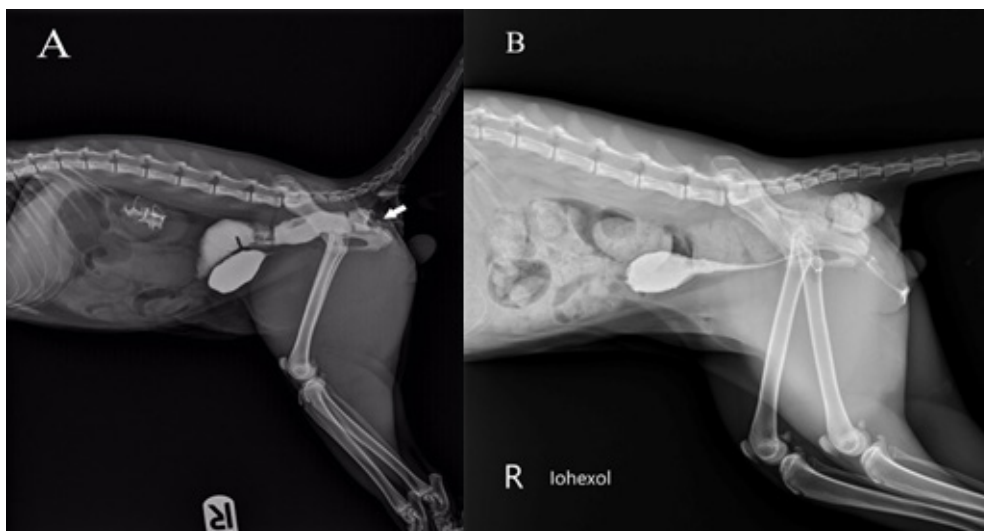


Figure 1 Pre-operation, the retrograde urethrocytogram with contrast medium showing the pelvic urethral open into rectal at pubic arch (arrows) (A). Post-operation, the retrograde urethrocytogram with contrast medium revealed no leakage and no stricture of urethra (B).

CASE MANAGEMENT

Surgical intervention involved the management of urethrorectal fistula and penile urethra obstruction. Preoperatively, morphine (M & H Manufacturing Co. Ltd, Thailand); 0.2 mg/kg SC, alfaxalone (Jurox Pty. Limited, Australia); 2 mg/kg IV, and cephazolin (L.B.S. Lanoratory Ltd, Thailand); 22 mg/kg IV were administered for pain management, anesthetic induction, and antibiotic prophylaxis respectively. The anesthesia was maintained throughout the surgery using isoflurane (Piramal Critical, Inc, USA); 1%, and the cat was placed in dorsal recumbency. For the surgery, a ventral midline incision was made through the caudal abdominal wall and elongated over the pubis (Figure 2A). Second, stay sutures were placed in the bladder apex and retracted cranially. The bladder was stabbed to allow the catheter (3 Fr, Kruuse, China) to be inserted inside the bladder to locate the urethral opening into the rectum. Next, pelvic osteotomy was performed to approach the urethrorectal fistula. Blunt and sharp dissection were employed to separate the urethra from the rectum (Figure 2B). The catheter was withdrawn and the fistula closed by being ligated with encircling 3–0 polyamide (B. Braun Surgical, Spain) before performing transection (Figure 2C). Subsequently, the urethra was disjoined from the rectum while stay sutures were at the tip of the urethra. Later, the penis was dissected to detach from loose connective tissue. The preputial mucosal membrane was carefully incised around the entire penis at the fornix of the prepuce. Then, the penis was pulled out from the prepuce, releasing the penis from its attachment. The remaining tube-like preputial mucosa was then precisely performed urethral and preputial mucosa anastomosis with 5-0 polydioxanone (Ethicon LLC, USA) using a simple interrupted pattern (Figure 3). After that, a piece of 0.6 mm diameter orthopedic wire was used to close the osteotomy followed by abdominal lavage using a warm sterile saline solution along with suction. The muscle sheath

and subcutaneous tissue were closed with 4-0 polydioxanone (Ethicon LLC, USA) using a simple continuous pattern, subsequently. The skin was closed with 4-0 polyamide using a cross-mattress pattern. Castration was performed. After the surgery, the cat was required to wear Elizabethan collars in order to prevent self-mutilation and was monitored daily for bladder distention. An inserted catheter through the external preputial stoma was fixed for ten days. Amoxy-clavulanic acid (BIC Chemical Co., Ltd., Thailand) at dose 15 mg/kg was administered to the cat orally every 12 hours for two weeks. Meloxicam (Boehringer Ingelheim, Spain) at dose 0.3 mg/kg was given subcutaneously, and surgical wound management was performed daily. Postoperatively, the cat was healthy and showed good wound healing without wound dehiscence. No complications were observed at the surgical site. Complete blood count, blood urea nitrogen, serum creatinine, alanine aminotransferase, blood gas analysis, and electrolyte were monitored three days after the operation. The complete blood count was normal. Blood urea nitrogen was 18.8 mg/dL. Creatinine was 1.55 mg/dL. Blood gas and electrolyte were normal. Urine output of the cat was 1.81 ml/kg/hr. Urinary analysis found a white blood cell count of 500 cell/ μ L. Ten days after the surgery, the catheter and skin sutures were removed. Retrograde urethrography using iohexol as contrast medium was performed on the cat to confirm there was no leakage or stricture at the anastomosis site (Figure 1B). The cat could urinate normally after catheter removal, and the animal showed no complications, difficulty, or discomfort such as dysuria and stranguria during urination. Signs of urine scalding around the urethral orifice were not observed, and no urine was found to be coming from the rectum. Follow up one month post-operatively the cat was healthy, no clinical signs or urination abnormalities were observed.

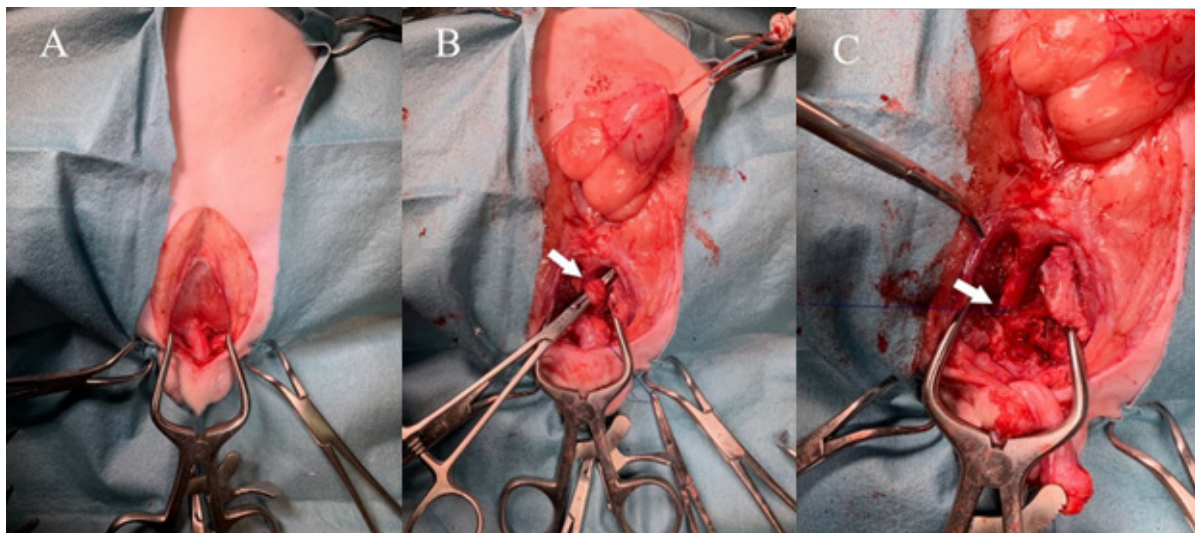


Figure 2 The ventral midline incision was made through the caudal abdominal wall and elongated over the pubis (A). The pelvic urethra was identified (arrows) (B). Ligated and cut the urethra that connect with rectal (arrows) (C).

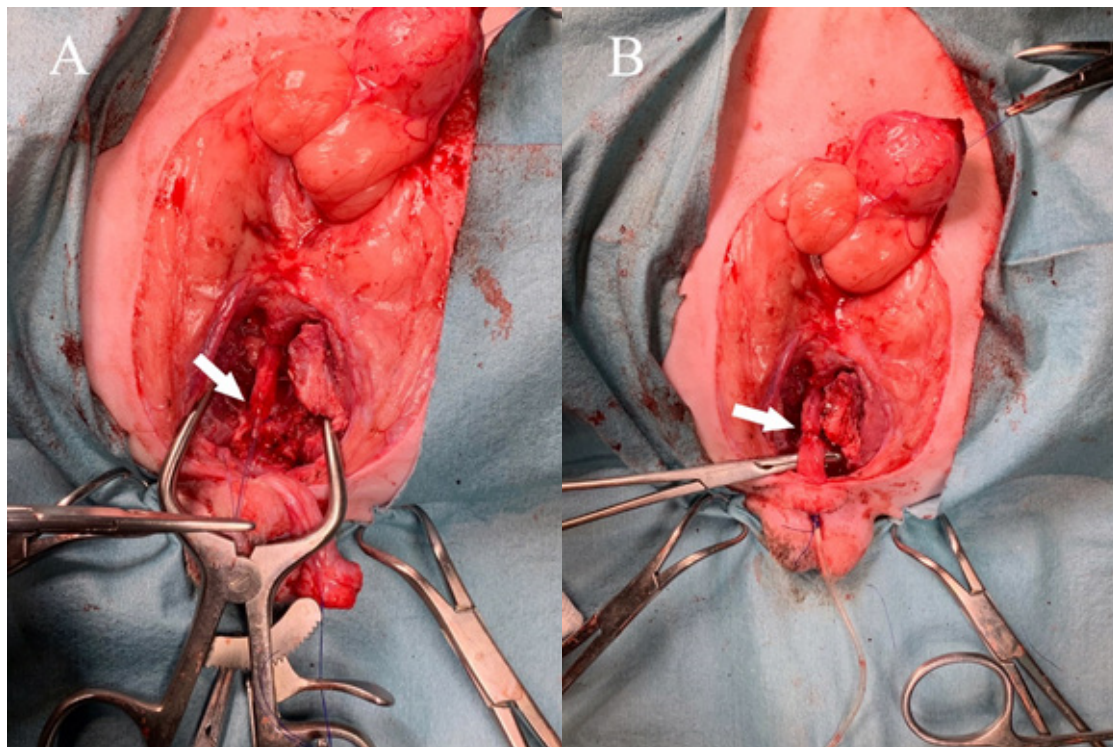


Figure 3 Show the urethra was free from rectal (arrows) (A). The urethra was connected with the prepuce (arrows) (B).

DISCUSSION

Traditionally, surgical treatment of the urethrorectal fistula involves fistulectomy. Additional intervention such as urethrostomy might be needed if the remaining distal portion of the urethra is unusable. However, postoperative complications such as stricture of a stoma, wound dehiscence, postoperative cystitis, and perineal hernia present (Hauptman, 1984; Johnson and Gourley, 1980; Osborne et al., 1975; Smith, 1978).

In this case, urethrorectal fistula could be either congenital or acquired due to adoption occurring when the cat was 1-month-old. Without knowing the history of trauma or presentation of clinical signs of urination via the rectum, it could be either. Fistulectomy and urethral opening relocation were employed to ameliorate the problem in this case. For this case, fistulectomy could be done without any complexity, but relocation of the urethral opening by primary anastomosis with the remaining penile urethra was not possible due to most of the penile urethral area being obstructed. Excising the obstruction site of the penile urethra prior to performing anastomosis would increase the length between both ends creating tensions, which could result in strictures or urethral rupture at the correction site. Generally, urethrostomy is utilized as a standard procedure. However, success can be limited from such complications mentioned above.

The use of preputial urethrostomy has been documented demonstrating superiority of complication reduction over the conventional perineal urethrostomy technique. Preputial mucosa would provide a natural defense

mechanism preventing retrograde flow of bacteria into upper urinary tract causing urinary tract infection (UTI) (Yeh and Chin, 2000). Urinating through preputial orifice could avoid urine scalding of adjacent skin and hair ingrowth associated with conventional procedure (Bradley, 1989). Selecting the adoption of primary sutures connecting the pelvic urethra with the prepuce in this study was able to minimize the complications of urethrostomy, provide an adequate length of the prepuce to reduce tension at the anastomosis as site, and decrease the chances of rupture or restriction, resulting in an outcome that looks as natural as the anatomy of the animal.

In the present case report, performing primary suture connecting the urethra with prepuce mucosa was a successful method for repairing the urethrorectal fistula with penile urethra obstruction.

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