The Haryana Veterinarian (March, 2023) **62(SI),** 126-128 ISSN 0033-4359 (P)

Clinical Article

SURGICAL MANAGEMENT OF BLOCKED CATS THROUGH VENTRAL PERINEAL URETHROSTOMY

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Received: 05.06.2022; Accepted: 18.07.2022

SUMMARY

Obstructive urolithiasis in the penile urethra is one of the most seen clinical anomalies in tom cats. To prevent hyperkalaemia and uraemia, catheterisation and medical intervention are the choices of treatment. Three tom cats were presented with a history of urinary dribbling since last four days. Clinical examination of the abdomen in all three revealed distensions of bladder and dysuria. Radiography and ultrasonography confirmed the distension of bladder in two cases along with echogenic sludge resting on the base of bladder in one case. Ventral feline perineal urethrostomy was performed in all three cases to make a urethral stoma directly on the skin which leads to uneventful recovery in all three tom cats.

Keywords: Feline, Obstruction, Penile urethrostomy, Urethral stoma, Urinary bladder

How to cite: Saini, D., Ali, M., Patil, H., Sawant, R., Khandekar, G.S. and Tripathi, S.D. (2023). Surgical management of blocked cats through ventral perineal urethrostomy. *The Haryana Veterinarian* **62(SI)**: 126-128.

Feline lower urinary tract disease (FLUTD) refers to the constellation of clinical signs related to disorders of the urinary bladder or urethra. Alternative terms include feline lower urinary tract signs (FLUTS) and feline urologic syndrome. It is classified as non-obstructive or obstructive, with obstruction occurring in 18-58% of male cats with FLUTD (Gerber *et al.*, 2008). Surgical management of the blocked cats has changed over the years from being a first line of attack to generally being reversed for cases where medical management techniques are no longer achieving their aim (Buffington *et al.*, 2002). However, the decision to take a cat to surgery has to be based on the severity and frequency of the clinical signs (Williams, 2009). Anatomically penile urethra in case of tom cats is narrower towards the end of penis as compare to the membranous part which is towards the bladder side. The narrowness of penile urethra causes the obstruction due to lodgement of crystal plaques and urethral calculi (Osborne *et al.*, 1996).

FLUTD is most commonly found in animals having age more than one year; the average susceptible age is typically four year. Struvite and calcium oxalates are most commonly found crystals responsible for urethral obstruction in case of tom cats. Both hyperkalaemia and uraemia are observed in case of urinary obstruction which leads to destruction of cell membrane potential and ventricular fibrillation. All these physiological anomalies are responsible for taking the life of patient at risk (Drobatz and Hughes, 1997). Castration of toms at very early age leads to atrophy of urethra and increases the risk of urethra obstruction. Perineal urethrostomy is a surgical procedure used in male cats to create a urethral stoma (permanent opening) between the pelvic urethra and the skin.

Three tom cats were presented in Bai sakarbai Dinshaw Petit Hospital for animals affiliated by Mumbai Veterinary College, Parel with a history of urethral obstruction along with haematuria and dysuria since last four to five days. Abdomen physical examination revealed the distension of bladder in all three cases. Clinical examination revealed sunken eyes, congested mucus membrane in two cases and slight respiratory distress in one case. Upon compression of bladder, blood tingedurine dribbled out of penile opening in one case and slight pale urine in other two cases with presence of fibrin clots. On the basis of radiographic thickness of wall of urinary bladder and its correlation with increase in total leucocyte count clinically, diagnosis was cystitis. Along with this there was blood clots in urine which indicate damage to the bladder wall. Haematology and biochemistry confirmed the cystitis due to increase in total leucocyte concentration and kidney anomaly because of increase in creatinine and blood urea nitrogen level. In all three toms, ultrasonography and radiography (Fig. 1) of abdomen revealed enlarged bladder and nephromegaly. After contemplating all the findings, it was decided to perform feline perineal urethrostomy through ventral approach to make a permanent opening known as urethral stoma directly to the skin.

Tom cats were anesthetized with the help of Ketamine hydrochloride as a dose rate of 23 mg per kg body weight and Triflupromazine acetate at a dose rate of 2 mg per kg body weight intramuscularly as an induction dose. Maintenance of anesthesia was achieved with the help of propofol at a dose rate of 4 mg per kg body weight. After anesthetizing cats were restrained at dorsal recumbency (Fig.

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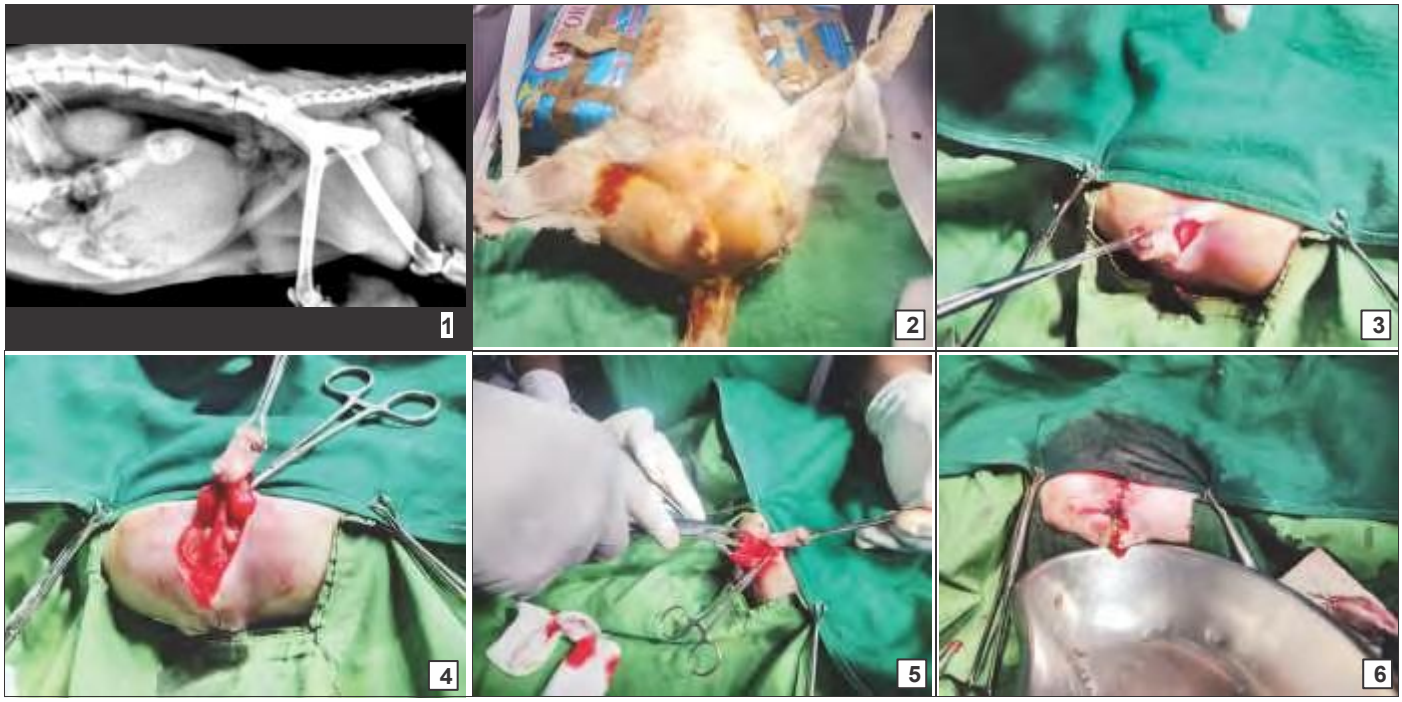

Figs. 1-7. **(1)** Lateral abdominal radiography showing increase in size of kidney and distended bladder; **(2)** Dorsal recumbency of cat having both hind limbs tied cranially; **(3)** Elliptical incision around the penis and scrotum; **(4)** Elliptical incision around the penis and scrotum and Separation of exposed penis and two bean shaped bulbourethral glands (Landmark for pelvic and penile urethra); **(5)** Separation of penile urethra from underlying tissue; **(6)** Mattress sutures applied at 6'oclock after making urethral stoma showing patency of urine through membranous pelvic urethra; **(7)** Post operative healing after 12 -14 days

2) with the hind limbs tied cranially until the pelvis was slightly elevated off the surgical table. Declipping of hairs and aseptic preparation of surgical area (Fig. 3) with 0.5% chlorhexidine solution and 1% povidone iodine solution. A purse-string suture of 3-0 nylon was applied around the anus to prevent faecal contamination, carefully avoiding the anal-sacs. Since two tom cats were already castrated and one was castrated just before urethrostomy, an elliptical symmetric incision was made around the penis and scrotum area after catheterisation of urethra with tom catheter (Fig. 4). Penile urethra was retracted caudally by dissecting the subcutaneous tissue to isolate the penis. With the help of scissors to separate the ischiocavernous tissue dorsally and retractor peni muscles ventrally. After resection of both muscles upward and downward penile urethra was exposed upto the bulbourethral glands (Fig. 5).

Penile urethra was dissected (Fig. 6) ventrally with BP blade upto the level of bulbourethral glands as these are the landmark of starting of membranous pelvic urethra and ending of penile urethra and dorsally upto the tip of the scrotum. After transecting the lumen of urethra two interrupted sutures were applied at 4 and 8 o'clock position leaving the suture edges long to prevent retraction of tissue. Non-absorbable polypropylene sutures no. 0 was applied at 6 o'clock position in such a way that it engages split thickness skin, penetrates the urethral mucosa, passes back through urethral mucosa and again skin. The mattress sutures were applied from dorsal to ventral manner on both sides (Fig. 7). The penis was amputated along with preputial skin with the help of tenotomy scissors. Perineal urethrostomy were completed after applying the remaining skin sutures with the help of simple interrupted pattern. Post-operatively meloxicam and cefotaxime was given at a dose rate of 0.5 mg per kg b. wt. and 50 mg per kg b.wt., respectively. Tom cats were kept under observation for next five days to check the urine output. Elizabethan collar was applied to prevent self-mutilation of sutures by cats. Complete suture healing occurred at 12-14 days (Fig. 8) in all three tom cats post-operatively without any complications.

In tom cats, urethral plug formation occurs in lower urinary tract diseases. Without proper medical and dietary

management, urethral obstruction may ensue. Obstructions that cannot be relieved by catheterization or recurrent in nature can be managed by perineal urethrostomy. Multiple surgical methods have been described to address the problem of obstruction in the feline urethra. These techniques include cystcolostomy, ureterocolostomy, urethrocolostomy, and multiple urethrostomy techniques including prepubic, transpelvic, subpubic, and the most widely used, perineal urethrostomy (Smith *et al.*, 1978). Perineal urethrostomy with ventral approach is the most advanced and modified technique to prevent both occurrence of urethral stricture and bacterial cystitis post-operatively. The use and misuse of indwelling catheters have been shown to increase the risk for ascending urinary tract infection (Lees and Osborne, 1984). Stricture of the urethral stoma is the most difficult postoperative complication to manage. The stricture develops because of excessive granulation and scar tissue formation around the opening.

CONCLUSION

Feline perineal urethrostomy with ventral approach is effective technique in making urethral stoma in obstructive urolithiasis associated with feline lower urinary tract syndrome. In this technique, chances of post-operative urethral stricture formation are reduced due to the apposition of membranous pelvic urethra to skin as compared to conventional technique where narrower penile urethra apposed to skin directly. Occurrence of post-operative bacterial cystitis due to ascending tract infection in this technique was also less due to the large space between anus and urethral stoma.

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