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Ventral meatotomy as management of female urethral stricture: a case report



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ABSTRACT

Introduction: Female urethral stricture is considered a rare condition. This condition may lead to recurrent lower urinary tract symptoms and urinary retention. Several techniques have been reported to overcome this disease with some advantages and disadvantages. This case report shows the author's experience in treating female urethral stricture using the ventral meatotomy technique.

Case description: A 63-year-old female suffered from poor urinary flow, recurrent urinary tract infection and lower urinary tract symptoms. Physical examination and urethroscopy showed

narrow urethral opening and severe trabeculation, respectively, which indicated bladder outlet obstruction due to urethral stricture. A ventral meatotomy was performed, followed by an indwelling catheter for a week. The patient showed improvement of the symptoms postoperatively.

Conclusion: Urethral reconstruction in female urethral stricture should be decided as definitive therapy, and an individualized approach must be applied based on patient factors and surgeon experience.

Keywords: Female urethral stricture, surgical technique, ventral meatotomy

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INTRODUCTION

Urethral stricture in women is considered a rare disease that can cause bladder outlet obstruction. Patients with this condition may complain of lower urinary tract symptoms. The estimation of bladder outlet obstruction in females due to lower urinary tract obstruction is around 3 – 8%.¹ In those cases, urethral stricture accounting for around 4 – 13%.^{2,3} Urethral stricture in women may appear with variable complaints, including a poor urinary stream, pain during micturition, frequency and urgency. These symptoms may lead to some bothersome conditions, such as recurrent urinary tract infection as well as urinary retention.

Female urinary stricture can be caused by various etiology, including recurrent infection, trauma, surgical injury, malignancy, and radiation.⁴ Until recently, there is no single diagnostic modality as the gold standard to diagnose urinary stricture in females. Some modalities have been suggested, including bladder ultrasound (USG), magnetic resonance imaging (MRI), urodynamic test, voiding cystourethrography, urethroscopy and post-void residual bladder volume evaluation.⁵ Various surgical techniques have been described to overcome this disease. However, no consensus exists regarding the superiority of one technique to another. Therefore, the best and appropriate

reconstruction technique to deal with female urethral stricture is still debatable.

This report intends to describe and evaluate the author's experience in treating female urethral stricture using ventral urethral incision at the author's institution.

CASE REPORT

A 63-year-old female came to the office complaining of poor urinary flow since several years ago. The patient also suffered from recurrent urinary tract infection and lower urinary tract symptoms during admission. A narrow urethral opening was revealed during physical examination (Figure 1). Urethroscopy was successfully introduced even though there was resistance. The bladder showed some severe trabeculations (Figure 2), which indirectly indicate an infravesical obstruction.

The urethral opening was dilated gradually using a metal dilator set in an orderly manner until it reached 26 Fr (Figure 3). The ventral urethral incision was performed with a length of 1.5 cm until the resistance was reduced, and each mucosa was stitched, leaving the ventral side of the urethra widened (Figure 4). After the procedure, a urethral catheter was left for seven days to facilitate wound recovery.

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The patient showed improvement regarding symptoms during the 2-weeks post-surgery follow-up. Uroflowmetry examination confirmed there was no obstruction exist with a maximum urinary flow rate at 22 ml/s.

DISCUSSION

There is no exact definition for female urethral stricture until recently. Some studies describe female urethral stricture as narrowing of anatomical condition between the urethra and bladder neck. Therefore, only a small-caliber of catheterization may successfully be introduced (below 14 Fr).⁶ Various procedures have been introduced for

female urethral stricture reconstructions. Repeated urethral dilation has often been used as a mainstay, even though its effectiveness is questionable.^{7,8} Endoscopic procedure has been introduced with the urethral incision at 3 and 9 o'clock directions. However, this procedure may injure the urethral sphincter that may lead to urinary incontinence.^{9,10}

Meatotomy followed by meatoplasty may be a sensible option for treating female urethral stricture, particularly isolated at the distal urethral meatus. This procedure is suitable for urethral stricture involving up to 1 cm from the distal urethra. Meatoplasty technique has been explained in the previous study as a procedure analogous to meatoplasty in males as distal urethral stricture management. Two approaches have been described based on the anatomical direction, namely dorsal and ventral approaches for 12 o'clock and 6 o'clock incision, respectively.¹¹ This case, the author uses the ventral incision approach due to the author's familiar anatomic surgical dissection and to avoid the urethra being repeatedly dilated. The potential benefits of the dorsal incision are the avoidance of urethra-vaginal fistulae. However, the drawback of this approach is the unfamiliar surgical anatomy for many surgeons. On the other hand, the potential advantage of the ventral incision is the low risk of neurovascular injury surrounding the clitoris that may lead to post-operative sexual dysfunction.¹² In addition, both approaches have their supportive references and considered reliable management alternatives in treating female urethral strictures.

Various other techniques have also been described in various works of literature, including flap and graft techniques. Urethroplasty in women using vaginal flaps has been described in many literature. It comprises several modifications/ variations of the technique as well as describing its advantages and disadvantages.^{13,14} One of the critical studies reporting graft urethroplasty was the literature reported by Tsivian and Sidi,¹⁵ followed by other studies.^{16,17} Vaginal flap and graft techniques are beneficial because they are based on readily approachable surrounding tissues. Nevertheless, these procedures rely on healthy surrounding tissues and may not be accessible when the surrounding tissues are not in normal condition, including atrophic or scarring tissues due to any prior surgeries. To overcome the disadvantageous, several studies have been demonstrated outstanding outcomes using buccal mucosal graft as the treatment of female urethral strictures.^{18,19}



Figure 1. The narrow urethra opening on physical examination

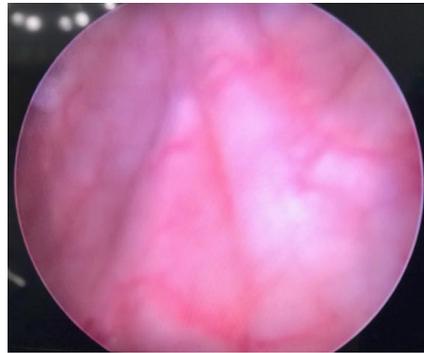


Figure 2. Bladder trabeculation showed on cystoscopy



Figure 3. Urethral dilation using a metal dilator



Figure 4. The final result following ventral meatotomy and mucosal stitches.

CONCLUSION

Urethral dilation may still be the most appropriate initial management of female urethral stricture.

However, urethral reconstruction in female urethral stricture should be deemed as a gold standard. Various reconstructive techniques have been reported with excellent outcomes, yet an individualized approach must be applied based on patient factors and surgeon expertise.

PATIENT CONSENT

The patient agreed and signed informed consent before publishing this clinical case without disclosing her identity in an academic journal.

FUNDING

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CONFLICT OF INTEREST

No conflict of interest exists regarding the publication of this study.

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