

The Outcomes of a Simple Urethral Dilatation Procedure in Patients with Short Segment Urethral Strictures

Urethral Dilatation for the Management of Urethral Strictures

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ABSTRACT

Objective: To determine the outcomes of simple urethral dilatation procedure for the management of short segment urethral strictures.

Study Design: Prospective study

Place & Duration of Study: This study was conducted at the Department of Surgery, Surgical Unit A, Ayub Teaching Hospital Abbottabad from January 2016 to December 2018.

Materials and Methods: Fifty two patients who presented with simple short segment urethral strictures were included. Patients' demographics including age, clinical presentation and etiology of strictures were recorded after written consent. Retrograde urethrography was performed. All patients received simple urethral dilatation under local anesthesia with an antibiotic and steroid instillation after the procedure. Pre- and post-operative maximum urinary flow rate on uroflowmetry and postvoid residual urine (PVR) on ultrasound were noted. Follow-up was taken at 4, 12 weeks and at 1 year. Overall improvement and recurrence rate were recorded at final follow-up.

Results: The mean age of patients was 37.6 ± 12.2 years. Majority of patients 42 (80.77%) had weak urine stream. Forty six (88.46%) patients had iatrogenic urethral strictures and 6 (11.54%) had idiopathic strictures. There was a significant improvement regarding maximum urinary flow rate and PVR at 1, 3 months and at 1 year post-operatively ($p=0.0001$). At final follow-up, 47 (90.38%) patients showed full improvement. Recurrence was seen in 5 (9.62%) patients.

Conclusion: Simple urethral dilatation with an addition of antibiotics and steroid is safe and effective treatment modality with fewer complications rate.

Key Words: outcome, urethral dilatation, short segment urethral stricture, iatrogenic

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INTRODUCTION

Urethral stricture is a common and challenging disease in urology. Currently, there are numerous surgical procedures to treat this disease. However, the diversity of treatment modalities reflects the scarcity of an optimal technique.¹ Urethral stricture in developed countries mainly involves the anterior urethra, in particular the bulbar urethra, which accounts for 46.9%.²

In addition, 30% occur in the penile urethra, and the remainder in a combination of the two and panurethra. The reasons for stricture also vary by site.³

The pathology of urethral stricture disease is poorly understood. External trauma generally causes partial or complete disruption of an otherwise normal urethra. How a stricture develops in other circumstances remains unclear, but it seems that for whatever reason a scar develops as a consequence of changes in the structure and function of the urethral epithelium and the sub-epithelial spongy tissue causing a fibrotic narrowing of the urethra.⁴ Surgical treatment of urethral stricture diseases is rapidly evolving. Currently there are various means of reconstructing the urethra that are almost all comparable in terms of technical easiness, associated morbidity and outcome. However, which one is the best technique has not yet been clearly defined.⁵ Internal urethrotomy and urethral dilatation are the most commonly performed procedures for urethral stricture disease. The other treatment options include laser urethrotomy, intraluminal stents and urethroplasty.⁶ The current first-line surgical treatment for urethral strictures includes internal urethrotomy by cold knife and laser.⁷ However, stricture recurrences

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and the need for additional surgery are shortcomings of these procedures. Thus, temporary dilatation after internal urethrotomy is also described by some authors for the prevention of stricture recurrence.⁸ Urethral dilatation is one of the most common modalities used in clinics; it is less invasive with minimal side effects, and appropriate for patients unwilling to undergo urethral surgery. A randomized study⁹ compared dilation and direct vision internal urethrotomy (DVIU), showing no significant difference in the outcomes between the two modalities. However, due to the high recurrence rate of this procedure, urethral dilation is often performed as a palliative maneuver and most patients will require a further urethral repairing surgery.¹⁰

Many of previous studies illustrated that simple dilatation for a short segment urethral strictures is safe and effective treatment modality with significant improvement and fewer complications rate.^{11,12} The present study was conducted to examine the outcomes of simple dilatation procedure for the treatment of short segment urethral strictures.

MATERIALS AND METHODS

This prospective study was conducted at the Department of Surgery Unit A, Ayub Teaching Hospital MTI, Abbottabad from 1st January 2016 to 31st December 2018. A total of 52 patients who presented with simple short segment urethral strictures were included. Patient's demographics including age, clinical presentation and etiology of strictures were recorded after written consent. Retrograde urethrogram was performed. Patients with too long strictures, complex and crooked strictures were excluded from the study. All patients received simple urethral dilatation under local anesthesia with an antibiotic + steroid instillation after the procedure. Pre- and post-operative maximum urinary flow rate (Q_{max}) on uroflowmetry and postvoid residual urine (PVR) using ultrasound was recorded. Follow-up was taken at 4, 24 weeks and at 1 year. Overall improvement and recurrence rate was examined at final follow-up. Data was analyzed by SPSS 24. Student t' test was used. Frequencies and percentages were recorded in tabulation form. P-value <0.05 was set as significant.

RESULTS

The mean age of patients was 37.6 ± 12.2 with ranges 20 to 60 years. The median stricture length was 0.74 (0.6-1.5) cm. Majority of patients 42 (80.77%) had weak urine stream, 3 (5.77%) had refractory urinary tract infection, 2 (3.85%) had interrupted urinary stream, 2 (3.85%) had painful micturition, 2 (3.85%) had urinary incontinence and 1 (1.92%) patient had urine stream deviation. According to the etiology of urethral strictures, 46 (88.46%) patients had iatrogenic strictures

and 6 (11.54%) had idiopathic urethral strictures (Table 1).

Table No.1: Demographic information of the patients

Variable	No.	%
Age (years)	37.6±12.2	
Symptoms		
Weak Urine Flow	42	80.77
Refractory UTI	3	5.77
Interrupted Urine Stream	2	3.85
Painful Micturition	2	3.85
Urinary Incontinence	2	3.85
Urinary Stream Deviation	1	1.92
Etiology		
Iatrogenic	46	88.46
Idiopathic	6	11.54

Table No.2: Pre- and post-operative findings of urine flow on uroflowmetry

Uroflowmetry (Q_{max})	Preoperative (ml/sec)	Postoperative (ml/sec)	P-value
At 4 weeks	6.5	17.00	0.0001
At 24 weeks	6.5	16.00	0.0001
At 1 year	6.5	14.5	0.0001

Table No.3: Pre- and post-operative findings of postvoid residual urine

Post-void residual urine	Pre-operative (ml)	Post-operative (ml)	P-value
At 4 weeks	73.2 (42-188)	20 (12-65)	0.0001
At 24 weeks	73.2 (42-188)	32.5 (10-75)	0.0001
At 1 year	73.2 (42-188)	30.5 (10-75)	0.0001

Table No.4: Final outcomes

Final outcome	No.	%
Cured	47	90.38
Recurrence	5	9.62

Pre-operatively the median maximum urinary flow rate (Q_{max}) on uroflowmetry was 6.5 ml/sec (ranges 3-14ml/sec) and median postvoid residual urine on ultrasonography was 73.2ml (42-188ml). The post-operative Q_{max} improved to 17.00 (16-23ml/sec) [p=0.0001] at 4 weeks, 16.00 (12-22ml/sec)[p=0.0001] at 24 weeks and, 14.5 (11-16.5ml/sec)[p=0.0001] at 1 year. The post-operative PVR urine values were 20 (12-65ml)[p=0.0001], 32.5 (10-75ml)[p=0.0001] and 30.5 (10-75ml)[p=0.0001] at 4, 24 weeks and at 1 year, respectively. The median procedure time was 14.5 (10-24) minutes (Tables 2, 3).

At final follow-up, 47 (90.38%) patients showed full improvement and recurrence was seen in 5 (9.62%) patients (Table 4).

DISCUSSION

Urethral stricture in men is one of the common disorders with a high morbidity. Many surgical procedures have been used for the treatment of urethral strictures but urethral dilatation is one of the mostly performed techniques used for short segment urethral strictures due to its easiness and fewer complication rates.^{13,14} The present study was conducted aimed to examine the outcomes of simple dilatation with an addition of antibiotics and steroid in patients with short segment urethral strictures. In this study we found 90.38% patients were fully recovered with no major complications. Recurrence was seen in 5 (9.62%) patients. These results were similar to some previous studies in which dilatation procedure showed effectiveness in 85 to 95% patients with recurrence rate 0 to 10%.^{15,16}

In our study the mean age of patients was 37.6 ± 12.2 , with age ranges of 20 to 60 years. The median stricture length was 0.74 (0.6-1.5cm). Majority of patients 42 (80.77%) had weak urine stream, 3 (5.77%) patients had refractory urinary tract infection, 2 (3.85%) had interrupted urine stream, 2 (3.85%) had painful micturition, 2 (3.85%) patients urinary incontinence and 1 (1.92%) patient had urine stream deviance. According to the etiology of urethral strictures, 46 (88.46%) patients had iatrogenic strictures and 6 (11.54%) had idiopathic strictures. These results were comparable to many previous studies.¹⁵⁻¹⁷

In present study we found significant improvement regarding maximum flow rate and PVR at 1, 3 months and at 1 years post-operatively ($p=0.0001$). Pre-operatively the median maximum urinary flow rate (Q_{max}) on uroflowmetry was 6.5 ml/sec ranges (3 to 14ml/sec) and median postvoid residual urine on ultrasonography was 73.2ml (42-188 ml). Post-operative (Q_{max}) improved to 17.00 (16-23 ml/sec) ($p=0.0001$) at 4 weeks, 16.00 (12-22)ml/sec ($p=0.0001$) at 24 weeks and 14.5 (11-16.5)ml/sec ($p=0.0001$) at 1 year. These results showed similarity to many of other studies in which patients showed significant improvement regarding maximum urinary flow rate with a p -value <0.001 [18-19] In our study we found, post-operative PVR values were 20 (12-65)ml ($p=0.0001$), 32.5 (10-75)ml ($p=0.0001$) and 30.5 (10-75) ml ($p=0.0001$) at 4, 24 weeks and at 1 year, respectively. The median procedure time was 14.5 (10-24) minutes. These results were comparable to several studies in which simple dilation procedure showed post-operatively significant difference regarding post void residual.^{20,21}

In our study we noticed fewer rate of post-operative complications, 1 patients showed bleeding and no patient with wound infection. The overall patients' satisfaction rate was 88.46%. These results were analogous to some other studies.^{22,23}

CONCLUSION

Urethral stricture in men is the one of the painful disorders with a high morbidity rate. Early and accurate diagnosis and better treatment modality helps to reduce the morbidity. We conclude that simple urethral dilatation with antibiotic and steroid instillation after the procedure is safe and effective treatment modality with fewer complications rates.

Author's Contribution:

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