

Stricture Urethra - Management and Outcome

Zein el Amir, Zeeshan Qadeer, Umer Javed Chughtai, Mirza Hammad Rauf, Ayesha Mushtaq and Rameez Ahmed Mughal

ABSTRACT

Objective: The objective of our study was to determine different modalities of treatment opted, in respect varying presentation of urethral stricture.

Study Design: Descriptive study.

Place and Duration of Study: This study was conducted at the Department of Urology, Benazir Bhutto Hospital, Rawalpindi from November 2017 to November 2019.

Materials and Methods: A total of 115 patients diagnosed to have stricture urethra and admitted through outdoor department were included in the study. Retrograde urethrography either alone or with antegrade cystogram was done. Management was done according to cause, urethral dilatation, optical urethrotomy and urethroplasty was performed. Success was determined by no need for further intervention or establishment of maximum flow rate >20ml/sec with 200 ml voided urine. All the patients were selected using retrograde urethrography either alone or with antegrade cystogram. Written informed consent was taken from every patient before taking history and examination. The permission of Ethical Committee was taken before collecting the data and get publishing in Medical Journal. The data was analyzed for results by SPSS version 20.

Results: A total of 115 patients admitted between 8-90 years (Mean age 45 years). 65 (56.52%) patients presented with complaint of lower urinary tract symptoms (LUTS), while 50 (43.47%) had acute urinary retention for which suprapubic urinary diversion was done. Common causes included iatrogenic injury in 69 (60%) & 30 (26.28%) with external trauma. 80 (69.56%) patients were treated by optical urethrotomy, 23 (20%) underwent urethroplasty, 17 (14.78%) were treated by anastomotic urethroplasty and 6 (5.21%) by substitution urethroplasty. 10 (8.69%) patients with submeatal stricture, boogie's dilatation was done. Patients unfit for surgery were managed with suprapubic urinary diversion under local anesthesia 2 (1.73%). According to investigations that were done before management, 62 (53.91%) had a stricture at bulbomembranous junction, 32 (27.82%) had stricture in bulbar urethra, 10 (8.69%) patients had submeatal stricture, 7 (6.28%) of them had a stricture in penile urethra and 4 (3.47%) patients had stricture in membranous urethra.

Conclusion: This study revealed most of the soft and short strictures can be treated by optical urethrotomy, however lengthy and complex strictures require either anastomotic, augmentation or substitution urethroplasty as a definitive treatment.

Key Words: Outcomes, Complications Urethral stricture, Optical Urethrotomy, Urethroplasty, Urethra, Urethral Dilatation

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INTRODUCTION

Urethral stricture is a relatively common disease in men with an associated prevalence of 229-627 per 100,000 males or 0.6 % of the at risk population, who are typically older men.¹

Department of Urology, Benazir Bhutto Hospital, Rawalpindi.

Correspondence: Dr. Zein el Amir, Professor of Urology, Benazir Bhutto Hospital, Rawalpindi.

Contact No: 03335186442

Email: drzeinuro@gmail.com

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It has complex management protocols due to wide range of causative factors resulting in urethral stricture². Commonly available modalities are dilatation, direct visual internal urethrotomy (DVIU), laser incision, stents and urethroplasty³. Strictures are grouped according to etiology as well as the anatomical location of strictures; penile, bulbar, pan-urethral and posterior. The severity of urethral stricture is related to amount of damage to the corpus spongiosum, the investing vascular layer of urethra, resulting in a progressive process termed spongiofibrosis.⁴ As urethral stricture causes progressive narrowing of the urethral lumen, symptoms and signs of urinary obstruction arise. Patients experience weak stream, straining to urinate, incomplete emptying, post-void dribbling, urinary retention and recurrent urinary tract infections. The symptoms resemble those of other causes of bladder outlet obstruction such as benign prostatic hyperplasia.⁵

There are many causes of stricture urethra, the largest group are iatrogenic and result from urethral manipulations (traumatic indwelling catheter, transurethral interventions, correction of hypospadias, prostatectomy, brachytherapy).^{6,7} In older days gonococcal urethritis used to be the commonest cause of stricture urethra, however, with the advent of antibiotics this has become less common.^{7,8} Which modality of treatment is needed depends on the length and site of stricture. The objective of this study is to present different causes of urethral stricture in our institution, most frequent sites involved, treatment offered to the individual patients and the outcome of procedures in relation to the etiology, site, length and the specific surgical method opted.

MATERIALS AND METHODS

This is a descriptive study designed, ethical review committee approval obtained and conducted in Urology department of Benazir Bhutto Hospital, Rawalpindi, from November 2017 to November 2019. In this duration 115 male patients having urethral stricture were admitted through outpatient department and were included in the study after giving explicit consent. All the details of the patients were recorded on a pre designed performa. Detailed history and clinical examination were done. Retrograde urethrography either alone or with antegrade cystography was done to diagnose the patients and accordingly management was planned.

Urethral dilatation was done with urethral sounds on outdoor basis in patients having submeatal stricture. Optical urethrotomy was done, stricture site was appreciated, incision was given at 12 o'clock position with urethrotome knife and foley catheter placed after the procedure. Foley catheter was removed after the 10th postoperative day. Urethroplasty was done in patients with failure to optical urethrotomy or long and hard strictures. Incision was given at perineal area, stricture area appreciated and removed. Then either end-to-end anastomosis was done or buccal mucosal flap was placed and tube made. Foleys catheter placed for 21 days.

Follow-up in the urology OPD ranged from 3 to 36 months.

Data collection was performed along parameters of demographics, etiology, renal profile, imaging and cystoscopic assessment and technique of repair and complications. Data analysis was performed on SPSS version 20. Descriptive statistics were used to summarize the continuous and categorical variables. Continuous variables like age and follow-up period were presented as mean \pm standard deviation (SD). Categorical variables such as location of stricture were expressed as frequencies with percentages. Chi-square test was applied to assess the differences in etiology and outcomes according to different locations and

techniques of urethroplasty. A p-value of <0.05 was considered as significant. The approval of Ethical Committee was taken before collecting the data.

RESULTS

Table No.1: Age Distribution

Age group (Yr)	Number of patients(n)	Percentage%
1-10	6	5.21%
11-20	9	7.82%
21-30	17	14.78%
31-40	13	11.30%
41-50	35	30.43%
51-60	15	13.04%
61-70	11	9.56%
81-90	9	7.82%
Total	115	100%

Incidence of Urethral stricture was maximum 35(30.43%) at age 41-50 and minimum 6(5.21%) at age 1-10 as shown in table no 1.

Table No. 2: Clinical presentation

Presentation	Number of Patients (n)
LUTS	69 (60%)
Acute urinary retention	50 (43.47%)

69(60%) patients presented with complaint of lower urinary tract symptoms (LUTS), while 50 (43.47%) had acute urinary retention for which suprapubic urinary diversion was done as shown in table no 2.

Table No. 3: Etiological distribution

Causative factor	Number of Patients (n)	p-value
Iatrogenic	69 (60%)	
Urethral Catheterization	49 (71.01%)	<0.001
Transurethral intervention	20 (28.98%)	<0.001
external trauma	30 (26.28%)	
straddle injury	14 (46.67%)	<0.001
pelvic fracture	16 (53.33%)	<0.001
other causes	14 (12.17)	
Infections	12 (10.43%)	<0.001
firearm injury	2 (1.74%)	<0.001
impacted stone	2 (1.74%)	<0.001
Total	115	

69 (60%) had iatrogenic cause for developing stricture urethra, out of which 49 (71.01%) patients developed stricture due to catheterization and 20 (28.98%) after transurethral intervention. 30 (26.28%) patients presented after external trauma, in which 14 (46.67%) had straddle injury while 16 (53.33%) due to pelvic fracture. In other causes 12 (10.43%) patients developed stricture urethra after infections, 2 (1.74%)

due to firearm injury to penis and 2 (1.74%) due to impacted stone as shown in table 3.

Table No. 4: anatomical Segregation of Injuries

Site	Number of patients(n)	p-value
Bulbomembranousurethral junction	62 (53.91%)	0.98
Bulbar urethra	32 (27.82%)	0.36
Submeatalurethra	10 (8.69%)	0.02
Penile urethra	7 (6.28%)	0.01
Membranous urethra	4 (3.47%)	0.08
Total	115	

According to investigations that were done before management, 62 (53.91%) had a stricture at bulbomembranous junction, 32 (27.82%) had stricture in bulbar urethra, 10 (8.69%) patients had submeatal stricture, 7 (6.28%) of them had a stricture in penile urethra and 4 (3.47%) patients had stricture in membranous urethra as shown in table 4.

Table No. 5: Frequencies of Procedures for Urethral stricture

Procedure	Number of Patients(n)	p-value
Optical urethrotomy	80 (69.56%)	0.06
Anastomotic urethroplasty	17 (14.78%)	0.20
Substitution urethroplasty	6 (5.21%)	0.02
Boogie's dilators	10 (8.69%)	0.01
Suprapubic urinary diversion	2 (1.73%)	0.5

80 (69.56%) patients were treated by optical urethrotomy having short and soft stricture. 23 (20%) patients having stricture more than 1.5 cm underwent urethroplasty, 17 (14.78%) were treated by anastomotic urethroplasty and 6 (5.21%) by substitution urethroplasty. 10 (8.69%) patients had submeatal stricture for which dilatation was done with boogie's dilators. 2 (1.73%) patients were not fit for surgery and suprapubic urinary diversion was done under local anesthesia as shown in table 5.

DISCUSSION

Management of urethral stricture has been continuously in evolution and therefore specialized centers are dedicated for its management in developed world. In 3rd world countries like ours, referral pathways are not stringently followed and death of sub-specialization in this area of interest leads to multiple interventions from basic to advanced complex procedure are attempted before arrival in a high-volume center. In western world most common cause of stricture urethra is iatrogenic, similar trend is seen in our cohort (9-11), while in developing countries venereal infection and non-specific urethritis are the main causes. (12) Over the past few decades, the advances in the techniques used to treat the patients with stricture urethra have led the

urologists to effectively manage the disease. Urethral dilatation being the oldest method is still effective for soft and short strictures, however it can lead to many complications like urethral rupture leading to extravasation of urine, urinary tract infections, high recurrence rate. Optical urethrotomy being the effective procedure to treat stricture urethra also has a very high recurrence rate unless serial dilatations post procedure are done, to avoid fibrosis of the mucosa(12). In our cohort optical urethrotomy was preferred modality for short & soft strictures (11,12). Sinanoglu et al conducted a study that concludes the effectiveness of long-term use of colchicine by the patients with stricture urethra, to prevent recurrence. According to the study colchicine receivers had 14.6 % recurrence rate as compared to non-receivers who had a recurrence rate of 32.6%. (13)Urethroplasty, an open reconstructive surgery has better and long-term success rates as compared to dilatation or endoscopic surgery. (14) However, urethroplasty should be done after the full maturation of the stricture, otherwise there may remain the fibrotic tissue behind that alters the success rates and can lead to recurrence. This is the reason behind' author's belief that almost 3 months should be given post transurethral manipulation so that the stricture should be fully matured. Most common cause of developing stricture urethra in our study was iatrogenic (60%). Almost 70% were treated by optical urethrotomy. Most common site of stricture was bulbomembranous junction. Urethral stricture or stenosis is frequently managed with either serial urethral dilation, such as filiform and followers or urethral sounds or radial dilation such as balloon dilation. (15) One randomized study has evaluated urethral dilation versus direct vision internal urethrotomy (DVIU) and showed no statistical significant difference in outcomes between the two procedures. (16) Patients who do not respond to repeat DVIU are those with long strictures (>2cm), penile strictures or membranous stenosis or those patients with multiple strictures. (17).

CONCLUSION

This study revealed most of the soft and short strictures can be treated by optical urethrotomy, however lengthy and complex strictures require either anastomotic, augmentation or substitution urethroplasty as a definitive treatment.

Author's Contribution:

Concept & Design of Study: Zein el Amir
 Drafting: Zeeshan Qadeer, Umer Javed Chughtai
 Data Analysis: Mirza Hammad Rauf, Ayesha Mushtaq, Rameez Ahmed Mughal
 Revisiting Critically: Zein el Amir,

Final Approval of version: Zeeshan Qadeer
Zein el Amir

Conflict of Interest: The study has no conflict of interest to declare by any author.

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