Original Article

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Surgery Section

Evaluation of Health-related Quality of Life, Voiding Pattern and Sexual Function in Patients with Status Stage 1 Urethroplasty for Pan Anterior Urethral Stricture Disease

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ABSTRACT

Introduction: Staged urethroplasty is used for the reconstruction of urethra in pan-anterior urethral stricture disease.

Aim: This study evaluated the Health-Related Quality of Life (HRQOL), voiding pattern and sexual function in patients with status stage 1 urethroplasty.

Materials and Methods: This cross-sectional study included patients who had undergone staged urethroplasty from March 2008 to April 2018. Data on HRQOL, voiding pattern and sexual function were collected using Short Form Health Survey (SF-36), International Prostate Symptom Score (IPSS) and International Index of Erectile Function (IIEF) questionnaire, respectively. Voiding pattern was further assessed by uroflowmetry, Post-void residual urine assessment (PVR) and calibration of urethra with 18 Fr Foley catheter. Student t-test was used for continuous variables and Chi-square test for discrete variables.

Results: A total of 37 patients were included in the study. The mean age of the patients was 53.4 years. The mean scores of physical component and mental component of SF-36 were 49 and 51, respectively. The overall IPSS score was mild in 18 (49%), moderate in 12 (32%) and severe in seven (19%) patients. Only three patients were sexually active with mean IIEF scores of 23/30 in erectile function, 8/10 in sexual desire, 7/10 in orgasmic function, 11/15 in intercourse satisfaction and 7/10 in overall satisfaction. The success of surgery assessed by voiding pattern was 75.6%. The IPSS score was significantly higher in older patient with age >55 years ($p<0.001$), and treatment failure group ($p<0.001$), however, there was no significant difference in patients who had BXO changes ($p>0.05$).

Conclusion: These observations suggest that stage 1 component of staged urethroplasty for pan anterior urethral stricture disease has a reasonable success rate and does not adversely affect the quality of life index. However, these patients need appropriate counselling regarding sexual life.

Keywords: Quality of life, Short form health survey, Urethral stricture disease

INTRODUCTION

The reconstruction of urethra in complex pan-anterior urethral stricture is a surgical challenge. Staged urethroplasty, which involves laying open of the anterior urethra with creation of perineal urethrostomy using inverted U-shaped scrotal flap in stage 1 followed by re-tubularisation of urethra in subsequent stages, is one of the best available treatment options [1-5].

Following stage 1 urethroplasty, patients have certain limitations like voiding in sitting position (like females), inability to ejaculate from the tip of the penis, but from perineal urethrostomy site, hence unable to impregnate their partner and are infertile, and have poor cosmetic appearance [6]. These limitations are exaggerated in Indian conditions where majority of low socio-economic patients have no access to toilet and void in open air. Hence, the general perception about status stage 1 urethroplasty is very distressing and unacceptable. However, many patients who have undergone stage 1 urethroplasty do not opt for stage 2 urethroplasty. To study this paradox, the HRQOL, voiding pattern and sexual function in these patients using validated questionnaire were evaluated.

MATERIALS AND METHODS

This was a cross-sectional study which included patients who had undergone staged urethroplasty from March 2008 to April 2018. Eligible patients were requested for an interview. Patients who had undergone stage 2 urethroplasty in the interim period were excluded from the study. Patient's treatment charts were reviewed to obtain the demographic profile, co-morbidities, disease and treatment details. Written informed consent was obtained from each patient for participation in the study.

Patients were administered Short Form Health Survey (SF-36), IPSS and IIEF [7-10]. Uroflowmetry and PVR volume were assessed. Calibration with 18 Fr Foley catheter was done to assess the patency of urethra. Patients were asked about their opinion whether to proceed with stage 2 urethroplasty. Further, patients were asked whether they would recommend this treatment option to a friend or relative who is suffering from similar illness.

The raw data collected from SF-36 were segregated into 8 different sub-components namely Physical Functioning (PF), role limitation due to physical health (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role limitation due to emotional health (RE) and general Mental Health (MH). All the sub-components were given equal weight and scored out of 100. The sub-components score was used to calculate the Physical Component Score (PCS) and Mental Component Score (MCS) [11]. Based on IPSS score patients were categorised as mild (1-7), moderate (8-19) and severe (20-35). IIEF scores [10] were divided into five domains namely erectile function, orgasmic function, sexual desire, intercourse satisfaction and overall satisfaction. Erectile function was scored out of 30 while orgasmic function, sexual desire, overall satisfaction scored out of 10 and intercourse satisfaction out of 15. These scores were used to classify the patients into severe, moderate, mild to moderate, mild and no dysfunction. The surgical result was considered failure when patient has undergone revision of meatus post-stage 1 urethroplasty or inability to calibrate the urethra with

18 Fr Foley catheter. These patients were included. Patients were considered sexually inactive if subjects were not interested in sexual activity and did not involve in sexual activity at the time of study.

For statistical analysis of data, SPSS software version 22.0 was used. The p-value was calculated using student t-test for continuous variables and Chi-square test for discrete variables. A p-value <0.05 was considered as statistically significant.

RESULTS

Out of 62 patients who had undergone staged urethroplasty from March 2008 to April 2018, 48 (77.41%) patients reported for the interview. Two had died and twelve did not report for interview. Eleven patients, who had undergone stage 2 urethroplasty in the interim period, were excluded from the study. Finally, a total of 37 patients were enrolled in the study. The mean age of the patients was 53.4 years (range 36-70 years).

Most of the patient belonged to low socio-economic status with average income less than Rs. 5000 per month. They were daily wage earners mostly working as agricultural or construction laborers. Twenty-six (70.27%) patients voided in open air with no access to proper toilet facilities. Thirty-four (91.89%) patients were married and living with their partners and 33(89.19%) of them had children. One patient was married but did not have children. Fourteen (37.83%) patients were smokers or tobacco chewers and 11 (29.73%) were alcoholics [Table/Fig-1]. Out of the 37 patients, ten patients had diabetes mellitus, eight had hypertension, six had coronary artery disease, seven patients had respiratory conditions (like chronic obstructive pulmonary disease or bronchial asthma).

Characteristics	Number of patients (n=37)
Age in years, mean (range)	53.4 (36-70)
Voiding in open air	26 (70.27)
Marital status	
Married	34 (91.89)
Unmarried	3 (8.12)
Patients having children	33 (89.19)
Smokers/tobacco chewers	14 (37.83)
Alcoholics	11 (29.73)
Urethral stricture disease	
Balanitis xerotica obliterans	16 (43.24)
Urethro-cutaneous fistula	11 (29.73)
urethral or vesical calculus	4 (10.81)
Stricture length (cm), mean	4.9
Surgical procedures before stage 1 urethroplasty	6 (16.22)
Duration of stage 1 urethroplasty (months)	34 (91.89)

[Table/Fig-1]: Demographic characteristics of enrolled patients.
Data shown as n (%), unless otherwise specified. BXO, balanitis xerotica obliterans

Pan anterior urethral stricture disease was associated with Balanitis Xerotica Obliterans (BXO) changes in 16 (43.24%) patients. Urethro-cutaneous fistula was present in 11 (29.73%) patients while urethral or vesical calculus secondary to stricture disease was present in four (10.81%) patients. The average length of the stricture was 4.9 cm. Before stage 1 urethroplasty, six (16.22%) patient had undergone other surgical procedures for stricture urethra. The mean duration of status stage 1 urethroplasty was 34 months.

Total number of patients who had failed calibration with 18 Fr Foley catheter was six (16.22%). Five (13.51%) patients had undergone neo-meatal revision surgery, out of which two had recurrent neo-meatal stenosis. The average maximum flow rate (Qmax) in uroflowmetry was 14.5 mL/s (range: 0-25 mL/s), average mean flow rate was 9.2 mL/s (range: 0-14 mL/s) and the mean PVR volume was 43 mL (range: 18-88 mL). The overall IPSS score was mild in 18 (49%), moderate in 12 (32%) and severe in seven (19%) patients [Table/Fig-2]. The IPSS score was significantly higher in older patient with age >55 years (p<0.001), and treatment failure group (p<0.001). But there was no significant difference in patients who had BXO changes. Similar trend was observed in uroflowmetric and PVR values. The summary of voiding outcome is tabulated in [Table/Fig-2].

Parameters		International prostate symptom score (IPSS)			Uroflowmetry		Postvoid residual volume (PVR)
		Mild	Moderate	Severe	Qmax	Q Mean	
Overall; n (%)		18 (49)	12 (32)	7 (19)	14.5	9.2	43
Age; n (%)	≤55 years	16 (84)	1 (5)	2 (11)	17.8	10.8	36
	>55 years	2 (11)	11 (61)	5 (28)	11.2	7.4	67
	p-value	<0.001*			<0.001**	0.008**	0.044**
Balanitis xerotica obliterans (BXO); n (%)	Present	7 (47)	5 (33)	3 (20)	11.0	6.3	58
	Absent	11(50)	7 (32)	4 (18)	16.1	10.4	48
	p-value	0.979*			0.016**	0.004**	0.576**
Treatment failure group; n (%)	Present	0(0)	2(22)	7 (78)	8.3	3.8	92
	Absent	18 (64)	10 (36)	0(0)	16.6	10.9	38
	p-value	<0.001*			<0.001**	<0.001**	0.002**

[Table/Fig-2]: Voiding outcome in post stage 1 urethroplasty patients.
*Chi-Square test used to calculate p value. **Student-t-test used to calculate p value

The well-being scores of status stage 1 urethroplasty patients are presented in [Table/Fig-3]. The overall PCS was 49 {95% Confidence interval (CI): 46.5-51.5}. The scores for the sub-component under PCS were PF-80, RP-76, BP-78 and GH-70. The overall MCS was 51 (95% CI: 49.5-53.5). The sub-component scores under MCS were VT-72, SF-78, RE-74 and MH-79. The PCS and MCS were significantly lower in patients with age >55 years (PCS: 53 vs. 45; MCS: 55 vs. 47) than patients aged <55 years, patients with comorbidities (PCS: 41 vs. 52; MCS: 46 vs. 53) than without comorbidities and treatment failure group (PCS: 41 vs. 51; MCS: 45 vs. 53) than success group. Six patients who failed calibration with 18 Fr Foley's catheter wanted to undergo revision surgery.

		Physical component score (PCS)	Mental component score (MCS)
Overall		**49**	**51**
Age	≤55 years	53	55
	>55 years	45	47
	p-value	0.004*	0.002*
Comorbidities	Present	41	46
	Absent	52	53
	p-value	<0.001*	0.013*
Treatment failure group	Present	41	45
	Absent	51	53
	p-value	0.001*	0.008*

[Table/Fig-3]: HRQoL in patients with status stage 1 urethroplasty.
*Student t-test used to calculate p-value

All of the patients, except two, had undergone stage 1 urethroplasty as last option and HRQoL was comparable between these subsets of patients. Only three patients were sexually active with mean IIEF scores of 23/30 in erectile function, 8/10 in sexual desire, 7/10 in orgasmic function, 11/15 in intercourse satisfaction and 7/10 in overall satisfaction implying mild sexual dysfunction. As all three patients were without any complications, it was not possible to compare the erectile function scores between complicated and uncomplicated groups. The sexually inactive patients when probed further, ignorance was the main reason for their inactive status. When given an option, only 11 patients (29.73%) wanted to proceed for stage 2 urethroplasty. Fifteen (40.54%) were satisfied with status stage 1 urethroplasty. Eleven (29.73%) patients opted out due to

personal and financial reasons, while 23 (62.16%) said that they will recommend this treatment to a friend or relative suffering from similar illness.

DISCUSSION

Numerous treatment modalities for reconstruction of urethra in the anterior urethral stricture are continually evolving since last few decades. Among these, stage 1 urethroplasty has high success rates. However, managing the side effects of this procedure has become one of the major challenges for urologists. The present study evaluated the HRQoL, voiding pattern and sexual function in these patients using validated questionnaires.

In the present study, a success rate of 75.6% was reported for stage 1 urethroplasty which was higher than the reported success rate of 70% for perineal urethrostomy in the study by Barbagli G et al., [12]. Another study by Barbagli G et al., reported a higher success rate (83.5%) for bulbar urethroplasty using 1-stage techniques [13]. This lower success rate can be probably attributed to the fact that staged urethroplasty is performed in complex pan urethral strictures like failed urethroplasty, associated with multiple urethro-cutaneous fistulas, secondary prostatic and vesical calculus, progressive BXO changes, hypospadiasis cripple and tuberculosis of urethra. The primary disease process is aggressive and progressive, leading to higher failure rates. High satisfaction rates (one-third do not want to proceed with stage 2) is probably a reflection of fact that this intervention has delivered in adverse condition and degree of patients suffering before the intervention. Benign prostatic hyperplasia prevalence increases with aging and is a confounding factor in increasing IPSS and poor voiding function in those above 55 years of age [14].

Although SF-36 is validated for use in Indian population [8], normative data is not available for Indian population. It has been recommended that weights of HRQoL for the general population gained from US developers could be applied to all databases worldwide for the purpose of comparison and simplicity [15]. The PCS of 49 and MCS of 51 in status stage 1 urethroplasty are very close to the norm of 50 [11]. However, patients in treatment failure group had a negative impact on the quality of life. The decreasing trend of quality of life with ageing and co-morbidities are well documented in various normative data [16,17]. A recent study by Lucas ET et al., demonstrated that urethroplasty is a well-tolerated and worthwhile procedure by patient's point of view [18]. They have shown a significant improvement in symptoms, QoL scores and Qmax after urethral reconstruction using patients as their own control.

However, the status stage 1 urethroplasty negatively impacted the sexual life of the patients, majority of them were sexually inactive. Even among the sexually active group, the inability to ejaculate inside the vagina affected their IIEF score and their fertility potential. Hence, single stage urethroplasty or prompt stage 2 correction is advisable in patients desiring to have children.

The study is limited by its relatively small sample size and absence of comparison with patients who had undergone single stage urethroplasty.

CONCLUSION

Status stage 1 urethroplasty patients had reasonable QoL but only few are sexually active for which there is need to provide proper counselling.

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