Original Article

Erectile Dysfunction in Male Patients of Urethral Stricture Following Urethroplasty

Erectile Dysfunction with Urethral Stricture

Muhammad Owais Rafiq[1], Muhammad Ibrahim Shaikh[2], Raj Kumar[1], Waqas Ahmed Memon[1], Zubda Malik[1] and Ali Raza[1]

ABSTRACT

Objective: To determine the frequency of erectile dysfunction in patients with urethral stricture following urethroplasty operation.
Study Design: A case-based study.
Place and Duration of Study: This study was conducted at the Department of Urology, Liaquat National Hospital, Karachi from November 2019 to April 2020.
Materials and Methods: A total of 79 sexually active males with urethral stricture on X-Ray urethrogram requiring urethroplasty were recruited in this study. In all of these patients urethroplasty was performed. Patient was discharged on the second postoperative day with Foley's catheter and follow-up after 2 weeks for removal of Foley's catheter. After successful voiding patients was followed after 12 weeks for erectile function. Final outcome i.e. erectile dysfunction was observed after 12 weeks of surgery by using IIEF score. All data was recorded in predesigned proforma.
Results: The average of the age was 37.11±10.02 years. Frequency of erectile dysfunction in patients with urethral stricture following urethroplasty was 34.18% (27 of 79). Rate of erectile dysfunction in patients with urethral stricture was statistically significant among age groups of the patients (p=0.036).
Conclusion: The data indicate that ED occurs after urethral reconstruction for the repair of urethral strictures. Location of the stricture and the age of patients were identified as the risk factors for ED. The posterior urethral stricture have a particularly strong association with erectile dysfunction.
Key Words: Urethral stricture, Erectile dysfunction, Urethroplasty

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INTRODUCTION

Urethral stricture disease (USD) is among the commonest and earliest described urological conditions, leading to considerable disability. It has perplexed surgeons for a long time[1,2]. Developed nations estimate a prevalence of 0.6%, which is likely greater in undeveloped nations.[3] For management, various surgical interventions have been proposed, e.g. primary anastomotic urethroplasty, substitution urethroplasty, and direct visual internal urethrotomy.[4]

A particularly concerning outcome of urethroplasty is erectile dysfunction (ED). Postoperative ED (PED) significantly impacts overall patient satisfaction with the procedure[4,5]. The outcomes and accomplishments of reconstructive urethroplasty have been thoroughly studied from the clinicians' perspective, e.g., improvement as seen on flowmetry, etc. However, failure to acknowledge and incorporate patient perceptions such as impact on sexual wellbeing and mental health is prevelant. Self-reports are the only metric available to gauge the effects of adverse postoperative outcomes on quality of life.[6,7]

There has been long-standing discourse regarding this subject. The estimated prevalence of ED in males > 20 years is reported to be 10% to 20%, with most reports leaning towards 20%.[8] In patients suffering from USD the prevalence of ED post-urethroplasty is approximately 2.3%. With regards to urethroplasty for repair of anterior urethral strictures (AUS), buccal mucosa graft (BMG) urethroplasty (originally presented by Humby, 1941)[9] and anastomotic urethroplasty (originally presented by Jordan et al., 1914)[10] are the most frequently performed. ED is either organic or psychogenic. Anatomically, the cavernous nerves are in close approximation to the proximal urethra, where they arise from the floor of the pelvis.

The focus of this research is to determine the frequency of ED following urethroplasty for USD. PED is

1. Department of Urology, Liaquat National Hospital and Medical College, Karachi.
2. Department of Urology, Khairpur Medical College and Teaching Institute, Khairpur Sindh.

Correspondence: Waqas Ahmed Memon, Senior Registrar, Department of Urology, Liaquat National Hospital and Medical College, Karachi.
Contact No: 03340122254
Email: drsham084@gmail.com

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observed within our practice on patient follow-ups and we find this an apt topic of study taking into account the relative novelty of the procedure in Pakistan and the lack of published local data. The findings of this study may impact technical aspects of urethroplasty procedures such as site of incision, technique of approach, and catheter retention time.

MATERIALS AND METHODS

A case-based study was conducted at the Department of Urology, Liaquat National Hospital, and Karachi, Pakistan, between November 2019 and April 2020. A Non - probability consecutive sampling was employed to recruit participants.

The sample size was calculated using the WHO software, taking the prevalence of erectile dysfunction based on IIEF-5 criteria before surgery. (P) = 28.5%, [8] margin of error =10%, and confidence level 95%. A total of 79 study participants were required. All patients aged between 20 to 50 years, who were willing to undergo intervention and follow-up and those who were sexually active males (on history) with urethral stricture (on X- Ray urethrogram) requiring urethroplasty were included in the study. Patients having recurrent urethral stricture (was confirmed by history), those who refused to complete the erectile function questionnaire, and those with uncontrolled hypertension, diabetes mellitus, and other major medical comorbidities were excluded from the study.

All patients visited the department of urology, Liaquat National Hospital, Karachi and following the inclusion criteria was included in the study. Ethical approval was obtained from the institutional review committee. An informed consent was taken prior to enrolment of patients in the study. In all these patients urethroplasty was performed by the consultant urologist with experience of more than 5 years. Patient was discharged on the second postoperative day with folley's catheter and follow-up after 2 weeks for folley's removal. After successful voiding patients were followed after 12 weeks for erectile function. In an attempt to more comprehensively assess erectile function and satisfaction after urethroplasty. Patient's response was evaluated after 12 weeks postoperatively. After discharge, all patients were followed up. Final outcome i.e. erectile dysfunction was observed after 12 weeks of surgery by using IIEF score as per operational definition. All data was recorded by a principal investigator on a predesigned proforma. Biasness and confounder was controlled by strictly following the inclusion criteria.

SPSS version 21 was used for data compilation and analysis. Frequencies and percentages were computed for qualitative variables like urethra (anterior/posterior) and erectile function (12 weeks as y/n). Quantitative variables were presented as mean ± SD like age, length of stricture and erectile function score (12 weeks). Effect modifiers like age, urethra and length of stricture were controlled through stratification. Chi-square test was used. P value ≤0.05 was considered as significant.

RESULTS

A mean age of 37.11 ± 10.02 years was observed. The mean length of stricture was 2.41 ± 0.43 cm. The frequency of erectile dysfunction in patients with urethral stricture following urethroplasty was 34.18% (27/79) (Table 1).

Table No.1: Demographics of the study participants

Parameters	**N (%)**
Age (in years)	37.11 ± 10.02
Length of stricture (cm)	2.41 ± 0.43
Erectile function score	20.38 ± 5.70
Age groups	
21-30	24 (30.38%)
31-40	25 (31.65%)
41-50	30 (37.97%)
Urethra status	
posterior urethra	46 (58.23%)
anterior urethra	33 (41.77%)
Erectile dysfunction	
yes	27 (34.18%)
no	52 (65.82%)

Rate of erectile dysfunction in patients with urethral stricture was statistically significant among age groups of the patients (p=0.036) while the difference was not statistically significant in urethra status or the length of stricture (Table 2).

Table No.2: Stratification of Erectile Dysfunction with Age, Urethra Status and Length of stricture

Parameter		**Erectile Dysfunction**	
	Yes	No	P-Value
Age Groups (Years)			
21 to 30	4 (16.7%)	20 (83.3%)	0.036
31 to 40	8 (32.0%)	17 (68.0%)	
41 to 50	15 (50.0%)	15 (50.0%)	
Urethra			0.893
Anterior	11 (33.3%)	22 (66.7%)	
Posterior	16 (34.8%)	30 (65.2%)	
Length of Stricture			
≤ 2.5	18 (32.7%)	37 (67.3%)	0.681
>2.5	9 (37.5%)	15 (62.5%)	

DISCUSSION

Urethral stricture disease (USD) has a prevalence of 229-627 per 100,000 males i.e. approximately 0.6% of the male populace at risk. The population at greatest risk are elderly males. The effects of USD greatly impact individual standard of living for men as well as of their partners.[11] According to Santucci et al. the geriatric male population suffers from USD most frequently and the incidence rises beyond the 55 year mark. USD can be treated in a large majority of patients

with urethral reconstructive surgery. These procedures have been documented to be very successful i.e. > 90%.[12] Of these procedures urethroplasty results in a lower rate of adverse outcomes and is associated with higher patient contentment.[13] Regardless, one very damaging outcome is ED, the incidence of which is 16.2% to 72% as per recent data.[14]

This study recruited 79 sexually active males, aged 20 to 50 years with USD as identified via x-ray urethrogram that were eligible for urethroplasty. The purpose was to determine the frequency of ED as an adverse outcome of the urethroplasty in these patients. The average age, and length of stricture of the participants were 37.11±10.02 years, and 2.41 ± 0.43 cm respectively. There were 30 (37.97%) posterior urethral strictures (PUS) and 49 (62.03%) anterior urethral strictures (AUS). Dharwadkar Sachin et al. reported that among their 48 participants aged 39.6±17.3 years, 83.3% had AUS and 16.7% had PUS.[15]

A recent study by Palminteri et al. assessed clinical details of approximately 1,500 male patients aged 2 years to 84 years with regards to USD that had been advised to follow up in specialized urogenital reconstruction facilities. The mean age of these patients on presentation with USD was 45.1±16.1 years. Majority of the strictures were present in the anterior urethra (92.2%) specifically the bulbar part (46.9%).[16]

In 2001, Coursey et al. reported data after assessing ED post-urethroplasty. The first study of its kind, this retrospective multicenter study evaluated 250 male patients. 30% of the participants had disclosed experiencing ED symptoms postoperatively to some extent. This study by us showed this frequency to be 34.18% (27/79). This frequency varies in the literature and seems to be subject to surgical procedure, site of stricture, and size of stricture.[17] Our study found ED to be present in 28.6% of the participants with AUS and 43.3% of those with PUS.

A longitudinal study conducted by Eltahawy et al. on 260 male patients post-anterior urethral reconstructive surgery showed that 2.3% (6/260) patients with previously healthy and normal erectile functioning reported ED[18].

It is well established that psychologic and neurologic factors greatly impact erectile functioning. Psychometric and neurologic assessments were not conducted and this is a significant limitation of our study. A statistical evaluation of the correlation between duration of disease and adverse outcomes of intervention was also not conducted; a further limitation.

CONCLUSION

The data indicate that ED occurs after urethral reconstruction for the repair of urethral strictures. Location of the stricture and the age of patients were identified as the risk factors for ED. The posterior urethral stricture have a particularly strong association with erectile dysfunction. These results may be relevant to the medical and surgical management of patients with urethral strictures. Erectile function should be assessed and documented in each patient before urethroplasty.

Author's Contribution:

Concept & Design of Study:	Muhammad Owais Rafiq, Muhammad Ibrahim Shaikh
Drafting:	Raj Kumar, Waqas Ahmed Memon
Data Analysis:	Zubda Malik, Ali Raza
Revisiting Critically:	Muhammad Owais Rafiq, Muhammad Ibrahim Shaikh
Final Approval of version:	Muhammad Owais Rafiq, Muhammad Ibrahim Shaikh

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

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