

## **The Effect of Stricture Urethra Surgery on Erectile Dysfunction and Recurrence in Patients with Anterior Urethral Stricture Disease in Adult Males at a Tertiary Care Centern.**

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### **Abstract:**

**Introduction:** Urethral reconstructive surgery has the potential to affect many domains of sexual function and thus negatively affect quality of life for patients with urethral stricture disease and hypospadias. These domains include erectile function, ejaculatory function, penile shortening, penile curvature, and altered penile sensation. The etiology, location, length and type of urethral stricture, and importantly the reconstructive technique have different repercussions on sexual function.

**Methods:** This study was conducted on 50 consecutive patients diagnosed with anterior urethral stricture attending the Outpatient department and getting admitted to Department of Surgery, J.A. Group of Hospitals, Gwalior during the period of January 2019 –September 2020.

**Result:** Erectile dysfunction was seen in 16% of patients with highest incidence in 46-60 years age group and stricture recurrence (14%) were the most commonly noted complications in the post-operative period. There was a significant fall in erectile dysfunction scores calculated 6 months post intervention, especially in patients undergoing urethroplasty, but long-term improvement in ED scores need to be assessed further.

**Conclusion:** Sexual dysfunction and stricture recurrence after urethral reconstruction is underappreciated and has a significant consequence on quality of life. Thus, it is important to recognize these sequel and counsel patients accordingly.

**Keywords:** Stricture Urethra, Urethroplasty, OIU.

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### **Introduction**

Urethral stricture is narrowing of urethra .The incidence of urethral stricture in India is estimated to comprise about 10% of urological cases. These processes lead to

scar tissue formation. Scar tissue contracts and the caliber of the urethral lumen is reduced, resulting in resistance to the normal ante grade flow of urine.

In this study, we have evaluated the outcomes of various management methods available for anterior urethral strictures, such as:

- Urethral dilatation
- Internal urethrotomy
- Urethral stents (not included in present study)
- Open reconstruction

In patients undergoing these above mentioned treatment procedures, the commonest complication seen in clinical practice is stricture recurrence. Various factors responsible for recurrence have been investigated in this study like age of the patient, length of the stricture, site of the stricture, etc. and whether outcomes improve over time or additional methods are required to correct stricture recurrence. Another debilitating problem faced by patients with urethral strictures is erectile dysfunction which has a serious impact on the quality of life, post-intervention methods for stricture urethra.

Erectile dysfunction is a serious complication of pelvic injuries. It can occur in the absence of urinary tract injury, but the incidence is higher when sub-prostatic urethra is ruptured and higher still when this is associated with a major prostate-vesical dislocation. There are 3 separate functions such as – erection, ejaculation and achievement of orgasm. The sensation of orgasm is rarely damaged by pelvic fracture injury, and ejaculation is commonly bestowed, after reconstitution of urethral continuity. A vast majority of patients experience failure of erection mechanism for days or weeks after a pelvic fracture injury but most recover satisfactory erections, some after a year or more after their injury. The erection failure is much more commonly the result of neural damage than the vascular insufficiency owing to the course of Nervi erigentes and their proximity to the subprostatic urethra, it is probable that almost every pelvic fracture urethral distraction injury results

in some damage to the neural elements of the erection mechanism. This is sufficient to cause complete erection failure in about 20% of these cases but some degree of impairment is much commoner. Any local operation immediate or deferred, in the area of sub-prostatic urethral injury carries some risk of critically extending the primary local neuropathy associated with it, particularly if it involves resection or separation of tissue in the area of Nervi erigentes postero-lateral to the sub-prostatic urethra. Hence during surgery, mobilization of retro-prostatic tissue plane is avoided to prevent injury to neurovascular bundle. However the normal posterolateral anatomic relation of the neural pathway to the subprostatic urethra is often grossly distorted by severe urethral distraction injuries and furthermore, they are secondarily incarcerated by scar tissue or hematoma. Although direct injury can be avoided by an anterior approach, a secondary distortional effect could be critical when a mechanism is precariously innervated. The incidence of secondary impotence after a delayed anterior approach repair is very less when a fully functional erection mechanism has survived the initial accident.

Temporary erectile dysfunction is a known complication following anterior urethroplasty and may occur in up to 38% of men following urethroplasty with the highest incidence following bulbar urethroplasty. Erectile function has been shown to decrease at 3 months postoperatively but generally returns by 6 months. Many studies have shown no significant decline in erectile function compared with preoperative function evaluated one year after surgery [1]. Moreover, certain studies have shown an improvement in ejaculatory function following urethroplasty. [2]

#### **IIEF 5 Questionnaire:**

Erectile dysfunction is a self-reported condition, and there are no objective diagnostic tests available to physicians for

confirmation of the condition, making it difficult for physicians to make an accurate diagnosis. Consequently, a need exists for an easy-to-use clinical instrument for the detection of ED that can supplement physical examination and patient history in clinical settings and that can increase the likelihood of a correct diagnosis for men with or without ED.

The prevalence of ED depends on the population studied and the definition and methods used. Reports indicate that ED bears a significant correlation with age and a lower quality of life.

The International Index of Erectile Function (IIEF), which consists of 15 items and 5 domains, is a psychometrically valid and reliable instrument that was developed through consultations with an international panel of experts for use in determining efficacy of treatment in controlled clinical trials. The IIEF has high sensitivity and specificity for detecting real treatment effects or the lack of treatment effects in patients with ED of broad spectrum aetiology. There is a need for a simple patient-administered diagnostic tool of ED for easy use by physicians in clinical settings.

The original IIEF instrument was designed specifically for use in clinical trials and is not well suited for use as a simple office screening measure. Hence, an abbreviated version of the IIEF was formulated.

An abridged five-item version of the 15-item International Index of Erectile Function (IIEF) was developed (IIEF-5) to diagnose the presence and severity of erectile dysfunction (ED). The five items selected were based on ability to identify the presence or absence of ED and on adherence to the National Institute of Health's definition of ED. These items focused on erectile function and intercourse satisfaction.

IIEF – 5 SCORING:

Category 1: Score 1-7 (Severe ED)

Category 2: Score 8-11 (Moderate ED)

Category 3: Score 12-16 (Mild to Moderate ED)

Category 4: Score 17-21 (Mild ED)

Category 5: Score 22-25 (No ED)

### **Aims and objectives-**

The effect of Stricture Urethra Surgery on erectile dysfunction and recurrence in patients with anterior urethral stricture disease in adult males at a tertiary care center.

### **Material and Methods**

**Sample Size-** A minimum of 50 Patients

**Type of Study:** Observational study (Prospective)

**Source of data:** Patients diagnosed with anterior urethral stricture attending the Outpatient department and getting admitted to Department of surgery, J.A. Group of hospitals, Gwalior.

### **Inclusion Criteria :**

All patients of anterior urethral stricture between 15 – 75 years of age.

Combined anterior and posterior urethral strictures.

Participant or a family member must be willing to give written and informed consent.

### **Exclusion Criteria:**

Patient of pure posterior urethral strictures.

Patients not giving written/informed consent.

The patients lost to follow up.

Female patients with disease under study.

Patients younger than 15 years and patients aged more than 75 year

### **Method:**

Patients undergoing various management measures were observed and evaluated at the end of the observation period, after

periodic follow-up. Pre-op and post-op evaluation of erectile function of the patients was done by IIEF-5 questionnaire. The patients who did not come for follow-up were assessed via telephonic conversation. Uroflowmetry of patients enrolled in the study were studied whenever available. Patient satisfaction after intervention was assessed by recurrence of symptoms experienced by the patient and uroflowmetry (whenever available)

### Statistical Analysis

All Statistical calculations were done with the help of Chi-Square test with degree of significance  $<0.5\%$  with SPSS software version 22.0

Results were tabulated and represented by suitable graphs and compared with other similar studies.

### Observation & Results

Following observations were made :-

**Table 1: Pre and post intervention erectile dysfunction scores (ED)**

Patient age group	Ed scores (mean +/- sd)		P value	Mean IIEF category
	Pre-intervention	Post intervention (6 months)		
15 - 30 years	23.33 +/- 1.0	23.44 +/- 1.13	0.729	5
<b>31 – 45 years</b>	<b>22.72 +/- 0.75</b>	<b>22.00 +/- 0.48</b>	<b>0.001</b>	<b>5</b>
46-60 years	20.57 +/- 1.65	20.57 +/- 1.69	1.00	4
61 – 75 years	17.55 +/- 1.94	17.22 +/- 2.17	0.347	4

The IIEF scores of patients in the age group between 15-30 years were (pre-op : 23.33/ post op – 23.44). There was a slight decrease in IIEF scores in 31-45 years age group (pre op- 22.72 / post op – 22) . The p value was 0.001 and hence the fall in IIEF

scores post intervention was highly significant.

The scores for 46-60 years age group and 61-75 years age group were (pre op – 20.57 / post op – 20.57) and (pre op – 17.55 / post op – 17.22) respectively.

**Table 2: Assessment of post-operative complications**

Complications	Number of patients (n)	Management	Percentage (%)
Scrotal swelling	1	Yes/Surgical	2
Rectal injury	0	-	0
Urosepsis	0	-	0
Erectile dysfunction (Newly diagnosed)	4	Medical	8
Chordee	0	-	0
Fistula	0	-	0

Out of 50 patients who underwent correction of urethral strictures, 1 patient developed scrotal swelling, accounting for 2% of study subjects. None of the patients developed rectal injury or urosepsis, chordee formation and fistula formation.

8 patients developed a fall in IIEF scores post operatively (16%), of which 4 were newly diagnosed (8%) and 4 were previously diagnosed cases of erectile dysfunction, who had a further decline in their post-op scores (8%).

Pre-op mean scores	Post-op mean scores	P value
20.50 +/- 2.33	18.75 +/- 2.55	0.00

The pre and post op mean scores of the 8 patients whose IIEF scores reduced post-operatively were 20.50 and 18.75 respectively and on comparison of these scores by paired 't' test the p value was 0.00, which was highly significant.

**Table 3: Assessment of post – operative recurrence**

Post op day	Number of patients on follow – up	Number of patients with recurrence
Post op day 7	46	0
1 month	43	0
1 – 3 months	39	2
3-6 months	37	4
1 year	32	7

Out of 50 patients enrolled in the study, 18 patients (36%) were lost to follow-up and hence complications of surgery and recurrence of symptoms could not be assessed in these patients.

Out of 32 patients who came for regular follow-up, 7 patients (14%) had recurrence of symptoms and re-experienced poor urinary stream and had urinary tract

obstructive features on uroflowmetry. They were treated with urethral endo-dilatation and improved symptomatically. 25 out of 50 patients (50%) did not have recurrence of symptoms till the conclusion of this study, however further follow-up is necessary to check long term recurrence.

### Discussion

Complications	Mundy AR <sup>(5)</sup> (1993)	Al-Qudah & Santucci <sup>(6)</sup> (2005)	Present study
Scrotal swelling/ tenderness / ecchymosis	-	4%	2%
Post void leak	9%	17%	-
Erectile dysfunction / impotence	2.5%	17%	8% (Incidence)
Stricture recurrence	10%	8%	14%
Chordee	1%	4%	-

### Erectile dysfunction scores:

The patients in age groups between 15-30 years and 31-45 years had a mean IIEF score under Category 5 – No erectile dysfunction, whereas patients in 46-60 years category and patients belonging to 61-75 years age group came under category 4 – mild erectile dysfunction, from the scores calculated both pre and post operatively. [5,6]

19 patients out of 50 (38%) had ED scores ≤ 21 before the surgical procedure, of which 10 patients were in the 46-60 years age group and all 9 patients belonging to the

61-75 years age group had pre-op erectile dysfunction (100%).

6 patients (12%) had marginal improvement in IIEF scores after the surgical procedure, while 4 patients (8%) newly developed erectile dysfunction post operatively (statistically significant as p value <0.05), of which 3 patients underwent urethroplasty and 1 patient underwent internal urethrotomy. 4 patients (8%) who previously had ED pre-operatively also had a fall in IIEF scores in the follow-up period.

The incidence of ED post urethrotomy in our study was found to be lesser than that of P H Graversen et al [7].

	P H Graversen et al <sup>(7)</sup>	Present study
Incidence of ED post - urethrotomy	10.6%	2%

However, the studies by **Urkmez et al** [3] , **Erickson et al** [1] and **Sharma et al** [4] state that there is no significant correlation between ED and urethroplasty, which is in contrast to our study where 5 patients developed erectile dysfunction after urethroplasty.

**Erickson et al** [1] reported that the older men (>50 years old) might have a higher incidence of erectile dysfunction after open surgery, but this morbidity might improve with time. This was similar to our study, where 3 of the 5 patients who had a decline in post op IIEF scores, were >50 years of age.

### Conclusion

Urethroplasty remains the gold standard procedure for treatment of urethral strictures due to less recurrence rates post-operatively as seen in our study and in other studies worldwide. Sexual dysfunction is a recognized complication of urethral stricture disease and is particularly seen post-urethroplasty, as seen by the comparison of pre and post-op IIEF scores of the patients enrolled in this study but studies have shown that age-related factors also play an important role.

- Short segment strictures were more frequently seen during the course of this study, as 86% of patients had stricture length less than 2cms.
- Erectile dysfunction (16% with highest incidence in 46-60 years age group) and stricture recurrence (14%) were the most commonly noted complications in the post-operative period.
- There was a significant fall in erectile dysfunction scores calculated 6 months post intervention, especially in patients undergoing urethroplasty, but

long-term improvement in ED scores need to be assessed further.

- Patients in 46-60 years and 61-75 years age group had mild erectile dysfunction (IIEF score < 21) both pre and post-operatively.
- 14% patients developed stricture recurrence in the follow-up period and were treated by urethral endo-dilatation.

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