

Original Research Article

Observational study to evaluate causes of development of anterior urethral stricture disease in adult males at a tertiary care center

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Abstract:

Introduction-Urethral stricture is narrowing of urethra due to scar tissue, which leads to obstructive voiding dysfunction and can cause potentially serious consequences. The incidence of urethral stricture in India is estimated to comprise about 10% of urological cases encountered in India. common risk factors today are trauma and iatrogenic causes. Less-common causes include inflammatory, infectious (gonococcal urethritis), malignant, congenital and autoimmune causes such as lichen sclerosus. majority of strictures are anterior (92.2%), with most strictures in the bulbar urethra (46.9%), followed by penile (30.5%) and pan-urethral strictures (4.9%). We have tried to address the causes responsible, outcomes of various treatment protocols in current practice, complications associated with this disease and the results of the procedures underwent by the patients at our centre

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: -

Urethral stricture is very common in urological opd mostly present with thin stream of urination or acute retention of urine .in our study mostly present patient was age of 31-45 year followed by 45-60 year .half of the patient having history of chronic smoking.14% of patient having history of improper foleys catheterisation in past .

Conclusion: Anterior urethral stricture disease is one of the commonest complications of urethral injuries and has a substantial impact on quality of life resulting in infection, bladder calculi, fistulas, sepsis and ultimately renal failure. proper catheterisation was attempted under aseptic precaution.

KEY WORDS :- Stricture Urethra, Lichen planus sclerotica

1. INTRODUCTION

Urethral strictures are characterized by changes in the extracellular matrix of urethral spongiosal tissue⁽¹⁾, which have been identified by histological comparison of normal and

strictured urethral tissue.⁽²⁾ Normal connective tissue is replaced by dense fibres interspersed with fibroblasts and a decrease in the ratio of type III to type I collagen occurs⁽²⁾. This change is accompanied by a decrease in the ratio of smooth muscle to collagen, as well as significant changes in the synthesis of nitric oxide in strictured urethral tissue.⁽³⁾

Small tears in this metaplastic tissue result in urinary extravasation, which causes a fibrotic reaction of the spongiosum. At the time of injury, this fibrosis can be asymptomatic, but the fibrotic process might cause further narrowing of the lumen of the urethra in the future, potentially resulting in spongiofibrosis and extra-spongiofibrosis, as well as symptomatic obstructive voiding symptoms.

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This study states that iatrogenic and idiopathic strictures were commonly seen in the West, while traumatic strictures and strictures due to Lichen sclerosus were more prevalent in the Indian population. The site of stricture was also compared in this study. The findings were – bulbar strictures: west – 56% , India – 42%; penile strictures: west – 27% , India – 5%; posterior urethral distraction defects: west - 9%, India – 34% ; pan-urethral strictures: west – 8% , India – 18%. Although bulbar urethral strictures were the commonest strictures in both the groups, the incidence of penile strictures was more common in the west while posterior urethral distraction defects and pan urethral strictures were more common in India. Gonococcal strictures are no longer common. most common cause of inflammatory stricture was found to be Lichen Sclerosus Atrophicus (LSA) most common cause of inflammatory stricture was found to be Lichen Sclerosus Atrophicus (LSA)

Of the numerous imaging modalities available to image the urethra, the most commonly used modalities are retrograde urethrography (RGU) also called as ascending urethrography and the voiding cystourethrography (VCUG). Other modalities which are slowly gaining ground are the Sonourethrography, Magnetic Resonance Imaging (MRI) and Computerised Tomography (CT).

Stricture disease if left undiagnosed and untreated may result in deleterious complications like UTI, vesical calculi, formation of urethral diverticulum, urethro-cutaneous fistulae. In case of presence of numerous urethro-cutaneous fistulae occurring in the perineum. if infected may result in Fournier's gangrene. Another lethal complication of a long-standing stricture is urethral cancer.

AIMS AND OBJECTIVES

To evaluate the predominant cause of development of anterior urethral strictures and its complications.

2. 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

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: Distribution of stricture urethra among different age groups

Age categories	Number of patients	Percentage
15 - 30 years	9	18
31 – 45 years	18	36
46- 60 years	14	28
61 – 75 years	9	18
Total number of patients	50	100

This table shows predominance of urethral stricture occurrence in patients aged 31-45 years, attributing to 36%, followed by 14 patients in between age 46-60 years (28% of study population). There were 9 patients each in between ages 15-30 years and 61-75 years, which amounting to 18% each.

Graph 1: Age distribution of urethral stricture

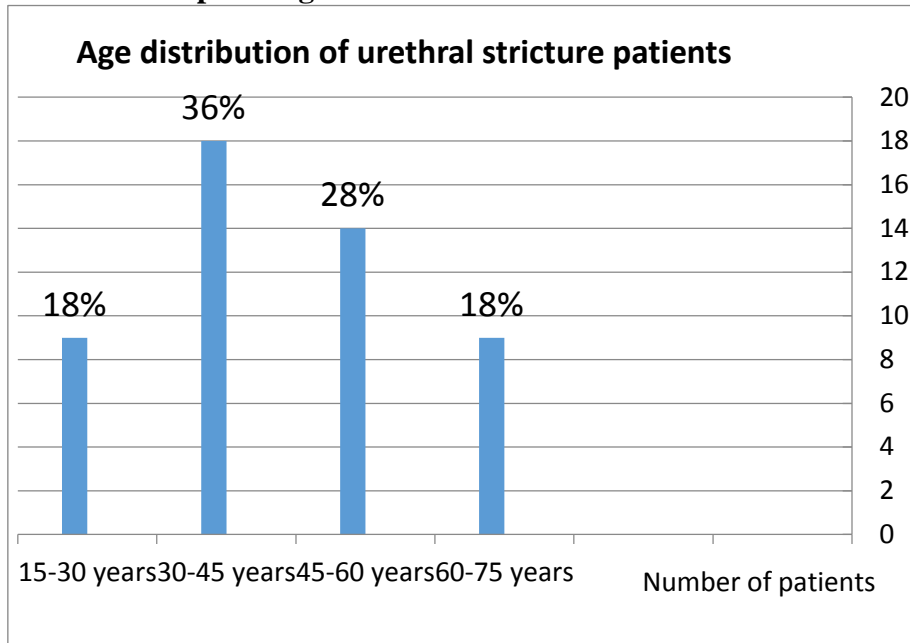


Table 2: Past history and co-morbidities in patients with urethral stricture disease

Age Categories

Past history	Number of patients (n)	Percentage (%)
Trauma (Excluding PFUDD)	28	56
Iatrogenic Causes (Catheter related)	7	14
Idiopathic Causes	11	22
Surgery	4	8
Total no. of patients	50	100%
Supra pubic catheterisation	14	28
Diabetes mellitus	7	14
Hypertension	3	6
Urethral discharge	0	0
Smoking history	31	62
Alcohol intake history	24	48
Balanitis Xerotica Obliterans	0	0

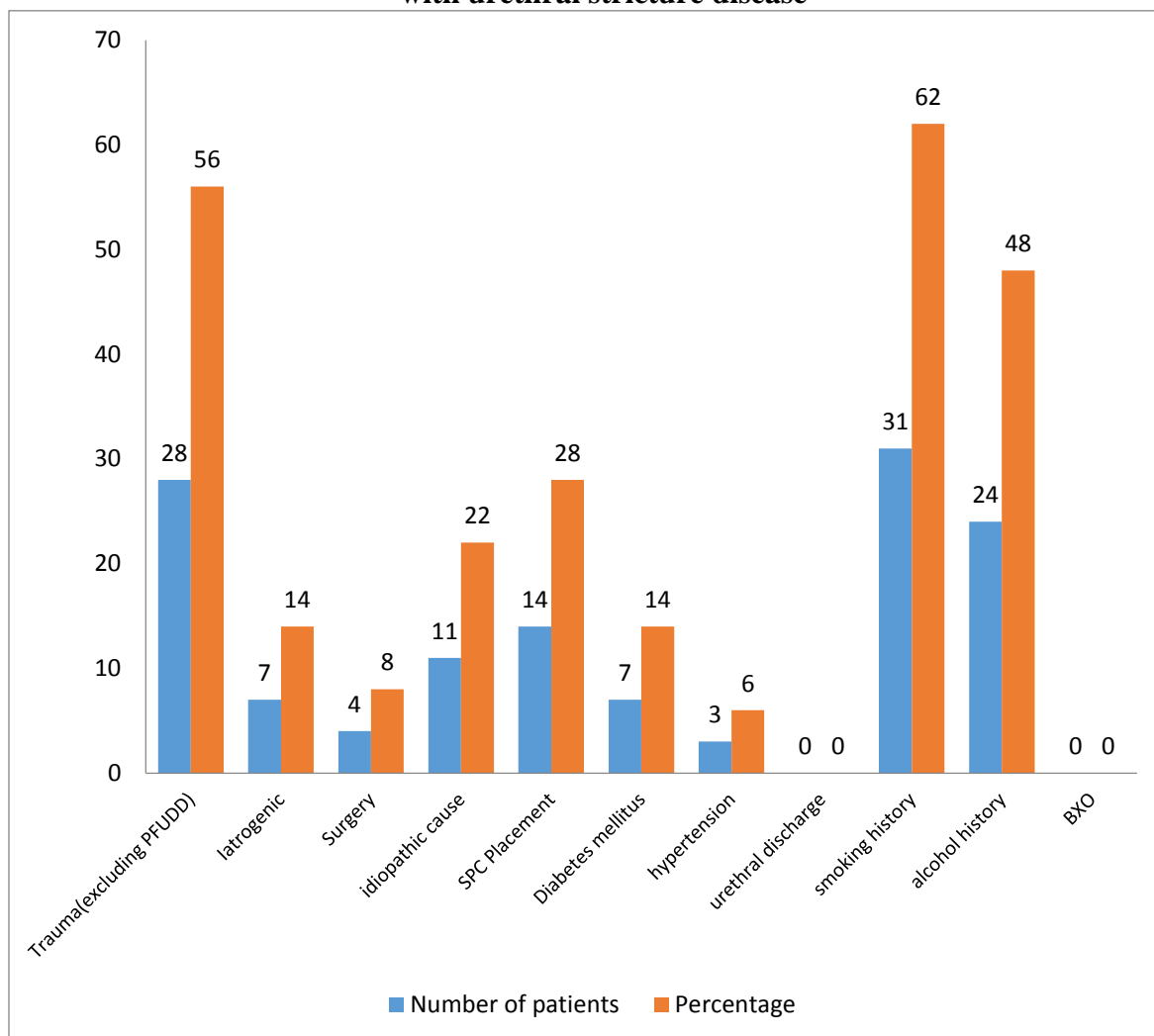
Among the study population of 50, history of smoking was seen in 31 patients (62%) and there was history of alcohol intake in 24 patients (48%).

Past history of improper per-urethral catheterization was noted in 7 patients (14%) History of supra pubic catheter placement was seen in 14 patients (28%), while past history of surgery to prostate or urethra was seen in 4 patients (8%).

7 patients were diagnosed cases of diabetes mellitus (14%) and history of hypertension was noted in 3 patients (6%) in this study. There was no history of urethral discharge or balanitis xerotica obliterans.

A significant causative factor could not be identified in 11 patients (22% idiopathic).

Graph 2: Showing distribution of associated co-morbidities and past history in patients with urethral stricture disease



3. DISCUSSION

The present study “**A prospective observational study to evaluate etiology, clinico-radiological presentation and outcomes of interventional methods in adult male patients presenting with anterior urethral strictures at a tertiary care centre**” is a prospective, observational study conducted in the Department of Surgery, J. A. Group of Hospitals, G.R. Medical College, Gwalior (M.P) with the main objective of evaluating the predominant

cause of development of anterior urethral strictures and also to study the various clinical and radiological presentations of urethral stricture patients.

In this study, the mean age of patients was **44.42 +/- 13.94 years**, with the prevalence of urethral stricture found to be the highest in age group between 31-45 years (36%). The results of the present study were similar to the study done by **Stein and Kulkarni et al** ⁽⁴⁾ in 2012, where the patients presented at a mean age of 41.4 years.

Past history of trauma to pelvic region (blunt straddle injury) was identified in 56% of study population in the present study, followed by idiopathic causes in 22% cases. The 3rd most common cause was iatrogenic- catheter related causes in 14% of study subjects in the present study.

This was similar to the study conducted by **Kulkarni et al** ⁽⁴⁾, where the most common cause of stricture urethra in Indian population was trauma (36.1%), which signifies the rising trend of traumatic urethral strictures in India.

In the study by **Barbagli et al** ⁽⁵⁾, idiopathic strictures were found to be the most common cause (65.3%), followed by catheter – related causes 13.9% and trauma was found to be the 3rd most common cause (10.1%). The difference in aetiology in comparison to our study can be attributed to the geographical variations, as the study was based in Italy.

As opposed to the present study, **Palminteri et al** ⁽⁵⁾, found that the most common aetiology of urethral strictures was iatrogenic (38.6%), followed by idiopathic causes (35.8%).

In the study by **Fenton et al** ⁽⁶⁾, there was equal prevalence of idiopathic and iatrogenic strictures (31.9%)

ASSOCIATED CO-MOBIDITIES:

14% of patients in the present study were diagnosed cases of diabetes mellitus, while 6% of patients had hypertension.

62% of patients were smokers and 48% of patients were known to consume alcohol.

In his study, **Mundy et al** ⁽⁷⁾ has stated that strictures might be more common in smokers and that smoking adversely affects the outcome of urethroplasty. Moreover, ischemia is a common underlying factor in causation of urethral strictures and microvascular causes such as in diabetes may also contribute to development of urethral strictures. ⁽⁸⁾

4. CONCLUSION

Urethral strictures are a significant cause of morbidity even today and affect the quality of life of patients.

The most common cause of anterior urethral strictures is a blunt force trauma to the perineum, although idiopathic strictures and iatrogenic factors are also significant causes. The present study also shows that urethral strictures are more prevalent in young adult males, who are prone to trauma.

There was a predominance of proximal and mid-bulbar strictures in this study as evidenced by radiological investigations and intra-operative findings.

The management of urethral strictures is continually evolving and no single strategy can be applied universally in all cases.

5. REFERENCE

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