

Outcomes of Urethral Strictures Treated with Endoscopic Urethrotomy and Urethroplasty

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ABSTRACT

Objective: The aim of this study is to determine the outcomes of urethral strictures treated with endoscopic urethrotomy and urethroplasty.

Study Design: Retrospective study

Place and Duration: The study was conducted at Urology department of Saidu Group of Teaching Hospital, Swat for the duration of nine months from 1st January to 31st September 2021.

Methods: There were sixty male patients underwent for urethral strictures were presented in this study. After receiving informed written consent, demographic baseline parameters such as age, BMI, and comorbidities of enrolled cases were determined. Patients were divided into two groups, group I had 30 patients and received urethroplasty and group II received endoscopic urethrotomy. Complete follow up among patients of both groups were taken in duration of 4-6 months. Outcomes among both groups were assessed and compared in terms of post treatment success rate and complications. SPSS 22.0 was used to analyze all data.

Results: In group I mean age of the patients was 50.8±13.61 years and had mean BMI 24.6±13.78 kg/m² while in group II mean age was 52.5±11.91 years with mean BMI 25.7±9.87 kg/m². Among all 60 cases, dysuria, urinary retention and pollakiuria were the symptoms. Most common cause was infectious found in 38 (63.3%) cases followed by urethral trauma in 14 (23.3%) cases. Membranous urethra was the most common site of urethral strictures. With a p-value of 0.04 after surgical treatment, a significant difference in Q max flowmetry was detected between the two procedures (urethroplasty 15.9±11.45 Vs 9.5 ±10.61 mL/s urethrotomy). Postoperative success rate was greater in group I 25 (83.3%) cases as compared to group II in 15 (50%) cases. Recurrence rate was higher in group II 8 (26.7%) cases as compared to group I 3 (10%).

Conclusion: In this study, we found that urethroplasty is safer and more successful than endoscopic urethrotomy, with greater urine flow and a low recurrence rate.

INTRODUCTION

The scarring of the urethral mucosa causes urethral stricture in males, narrowing the lumen of the urethra. Male incontinence is most frequently caused by this condition in males under the age of forty. At a prevalence of 200 cases per 100,000 males in their 20s, increasing to 900 in their 70s, the disease affects around 62,000 men in the United Kingdom (UK) [1]. Men's urethral stricture causes about £10 million in NHS expenses each year in England, with over 17,000 hospital admissions, 16,000 bed-days, and 12,000 procedures [2]. Urinary incontinence and decreased flow are the most common symptoms that lead men to seek treatment for urethral strictures.[3] Maximum flow rate is used to determine how much urine is restricted by a stricture, together with endoscopic and urethrographic imaging to locate its exact location and length (Qmax). Most (70 percent) of the strictures are found in the perineum, a part of the urethra that travels between the legs and connects the groyne to the bladder (bulbar urethra). Patients with a bulbar stricture who are experiencing symptoms should have surgery to expand the restricted area. A rigid endoscope with a steel blade attached is inserted into the urethra, and the diseased section is expanded by longitudinally incising it through healthy tissue. This is the typical procedure for newly discovered strictures in the UK. The cure rate for the initial urethrotomy (defined as no recurrence within two years) is between 40 and 70 percent [3].

Due to its low risk of complications and fast recovery time following surgery, urethrotomy has become the most popular treatment for recurring bulbar stricture. [4] Despite this, future occurrence is expected. Prolonged catheterization and an extended return to regular activities are required with an open procedure. This is because the procedure demands greater competence and a longer recovery period. A long-term cure with no need for additional treatment is possible with urethroplasty [5,6]. Male patients have to weigh the risks and benefits of each procedure [7,8] before making a final decision on which one to get done. As a result, current decision-making is driven by the

availability of local knowledge, physician guidance, patient comorbidities, and patient preferences.

When it comes to surgical treatment of the posterior urethra (which includes the bulbar urethra), length of stricture is often taken into consideration. At less than one centimetre, a urethrotomy is the preferred operation; at more than one centimetre, it is suggested to do a urethroplasty. [9,10] Endoscopic or open surgical results vary depending on the series and other parameters, such as the location or size of the stricture or aetiology; nonetheless, these surgeries have better results in patients who have received urethroplasty treatment. [11,12]

Study participants were men who had undergone surgical therapy for urethral stricture using one of two methods at our institution in the preceding five years. The study's goal was to examine the results.

MATERIAL AND METHODS

This retrospective study was conducted at Urology department of Saidu Group of Teaching Hospital, Swat for the duration of nine months from 1st January to 31st September 2021 and consisted of 60 patients. After receiving informed written consent, demographic baseline parameters such as age, BMI, and comorbidities of enrolled cases were determined. Patients with perineal infections and/or fistulas, as well as those who were unable to provide informed permission to randomization and were not eligible for up to a 3-hour duration of anaesthesia, were excluded from this research.

The patients between the ages of 20 and 75 were enrolled in the study. There were 30 urethroplasty surgery patients in group I and 30 endoscopic urethrotomy (EU) patients in group 2. The stricture's aetiology, location, length, maximal urine flow before surgery, 6 months after surgery, and functional results with serial voiding urethrography 6 months after surgery were all taken into account while evaluating the stricture's features.

It was necessary to employ the Shapiro-Wilk test or the D'Agostino-Pearson omnibus test to make sure that the quantitative variables under investigation had a normally

distributed. A logarithmic adjustment was applied to the variables whose distribution did not fit the norm. The study's participants were analysed. Percentages were used to provide the results of the qualitative variables, whereas averages and standard deviations were used to describe the results of the continuous variables. For comparison purposes, the chi-square test was used, which was then followed by the Fisher exact test when the chi-square test didn't meet the required level of validity for comparison. Parametric tests for K contrast medium were not fulfilled, hence the nonparametric Kruskal-Wallis and Mann-Whitney U tests had to be utilised. The p 0.05 significance level was used. Analyzing all of the data was done with SPSS 22.0

RESULTS

In group I mean age of the patients was 50.8±13.61 years and had mean BMI 24.6±13.78 kg/m² while in group II mean age was 52.5±11.91 years with mean BMI 25.7±9.87 kg/m². Among all 60 cases, dysuria, urinary retention and pollakiuria were the symptoms. Diabetes were found in 9 patients of group I and 11 in group II, smoking history was found in 8 patients of group I and 7 in group II, chronic pulmonary disease was found in 10 cases of group I and 9 cases of group II.(table 1)

Table-1: Characteristics of enrolled cases

Variables	Group I	Group II
Mean age (years)	50.8±13.61	52.5±11.91
Mean BMI (kg/m ²)	24.6±13.78	25.7±9.87
Symptoms		
dysuria	14	16
urinary retention	10	9
pollakiuria	6	5
Comorbidities		
diabetes	9	11
smoking history	8	7
chronic pulmonary disease	10	9
cardiovascular disease	3	3

Most common cause was infections found in 38 (63.3%) cases followed by urethral trauma in 14 (23.3%) cases and iatrogenic lesions were found in 8 (13.3%) cases.(fig 1)

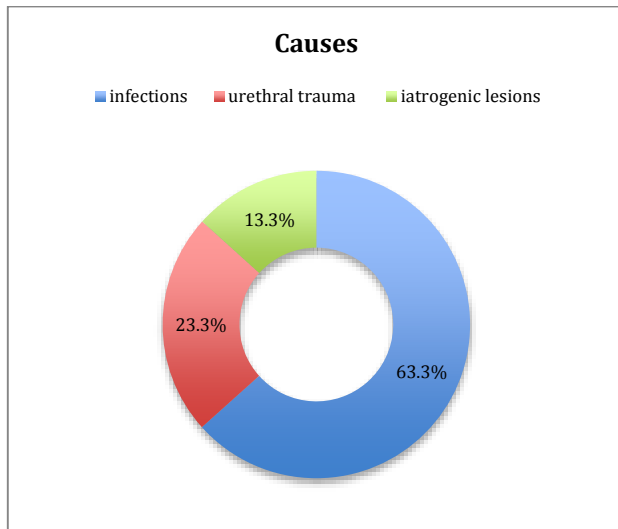


Figure-1: Causes of urethral strictures among all cases

Membranous urethra was the most common site of urethral strictures followed by bulbar urethra and penile urethra.(fig 1)

With a p-value of 0.04 after surgical treatment, a significant difference in Q max flowmetry was detected between the two procedures (urethroplasty 15.9±11.45 Vs 9.5 ±10.61 mL/s urethrotomy).(table 2)

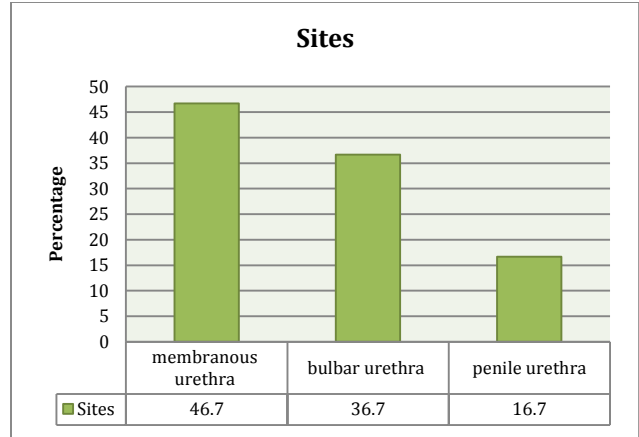


Figure-2: Sites of urethral stricture among all cases

Table-2: Pre and post-operative comparison of outcomes among both groups

Variables	Group I	Group II
Pre-operative		
Q max (mL/s)	5.2±13.15	6.5±10.51
Post-operative		
Q max (mL/s)	15.9±11.45	9.5 ±10.61

Postoperative success rate was greater in group I 25 (83.3%) cases as compared to group II in 15 (50%) cases. Recurrence rate was higher in group II 8 (26.7%) cases as compared to group I 3 (10%).(table 3)

Table-3: Comparison of success rate and recurrence rate among both groups

Variables	Group I	Group II
Success rate		
Yes	25 (83.3%)	15 (50%)
No	5 (16.7%)	15 (50%)
Recurrence rate		
Yes	3 (10%)	8 (26.7%)
No	27 (90%)	22 (73.3%)

DISCUSSION

The surgical treatment of urethral stricture is still under debate, despite the widespread belief that urethroplasty is the best option. [13] Others believe that urethrotomies and even dilations of the urethra can be effective treatments. [14,15] Male urethral stricture is a rather common ailment. The location, aetiology, duration of the stricture, and technology available influence the treatment. Some treatment options include minimally invasive procedures (such as dilation and EIU) and surgical repair with a flap or graft. [16] Using a urethrotome, an EIU treatment is used to treat a narrowing of less than 1 cm in length. [17]

In current study 60 male patients were included. Patients were divided into two groups, group I had 30 patients and received urethroplasty and group II received endoscopic urethrotomy. In group I mean age of the patients was 50.8±13.61 years and had mean BMI 24.6±13.78 kg/m² while in group II mean age was 52.5±11.91 years with mean BMI 25.7±9.87 kg/m². Among all 60 cases, dysuria, urinary retention and pollakiuria were the symptoms. Nine patients in group I had diabetes, while eleven in group II did. Eight patients in group I had a smoking history, while seven were found to have Chronic Obstructive Pulmonary Disease (COPD). Ten patients in group I were diagnosed with diabetes, and nine patients were diagnosed with COPD in group II. This investigation's findings were comparable to those of earlier research. [18,19] There were 38 (63.3 percent) instances with infections as the most prevalent cause, followed by 14 (23.3 percent) cases with urethral trauma, and eight (13.3 percent) cases with iatrogenic lesions. Membranous urethra was the most

commonly affected location, followed by bulbar urethra and penile urethra as the next most frequently affected sites, respectively. [20] In light of the findings of our study, we feel that urethroplasty should be used as the first line of treatment in cases of 1.5 cm or greater strictures, as well as in cases when internal urethrotomy is not required and treatment failure occurs. In our patients who later underwent urethroplasty, we found that this was the case. We were unable to perform a comparison of findings for different lengths of strictures due to the small number of patients and the characteristics of the strictures (1.5 cm and 3 cm). [21] Preparation with urethrotomy has no effect on the results of urethroplasty, and it may thus be a less invasive treatment option depending on the surgical risks and patient preferences. [22] We must emphasise, however, that the long-term results of urethrotomy have been shown to be significantly worse than those of urethroplasty. [22]

In our study, with a p-value of 0.04 after surgical treatment, a significant difference in Q max flowmetry was detected between the two procedures (urethroplasty 15.9±11.45 Vs 9.5 ±10.61 mL/s urethrotomy). Postoperative success rate was greater in group I 25 (83.3%) cases as compared to group II in 15 (50%) cases. Recurrence rate was higher in group II 8 (26.7%) cases as compared to group I 3 (10%). [23,24] In certain cases, endoscopic urethrotomy is preferable; however, the operation of urethroplasty, which is used to treat urethral stricture, allows for the introduction of novel methods and alterations that are not possible with urethrotomy (although different techniques of urethrotomy can be used with different types of materials like laser, cold cut or electric cut). [25] Inorganic matrices for surgery and organic matrices filled with cells from varied sources for tissue engineering have become more accessible as a result of the development of urinary tract urethroplasty. [26]

CONCLUSION

In this study, we found that urethroplasty is safer and more successful than endoscopic urethrotomy, with greater urine flow and a low recurrence rate.

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