ORIGINAL ARTICLE

STRICTURE RECURRENCE AFTER OPTICAL INTERNAL URETHROTOMY WITH AND WITHOUT CLEAN INTERMITTENT SELF CATHETERIZATION IN URETHRAL STRICTURE

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ABSTRACT

Background: The treatment of urethral stricture is usually not difficult but the problem lies in high rate of recurrence. All types of surgical procedures for urethral stricture have complication of stricture recurrence in different proportions. The objective of this randomized clinical trial was to compare the stricture recurrence after optical internal urethrotomy with and without clean intermittent self catheterization in patients with urethral stricture.

Material & Methods: Total 120 patients aging 20-60 years with urethral stricture of up to 1.5 cm and up to six months duration were included. Patients with traumatic urethral stricture, congenital or malignant strictures were excluded. All selected cases were randomized into two groups by lottery method. In treatment group 1, optical internal urethrotomy was done with clean intermittent self catheterization. In control group 2, optical internal urethrotomy was done without clean intermittent self catheterization.

Results: Mean age of patients in treatment group 1 was 47.73 ± 7.31 years and in control group 2 was 47.91 ± 8.24 years. Majority of patients 41 (34.17%) were in the age group of 51 to 60 years. Mean (SD) duration of stricture was 2.69 ± 1.86 months. Mean length of stricture was 0.91 ± 0.56 cm. Recurrence of stricture was seen in 13/60 (21.67%) patients in group 1 and 29/60 (48.33%) patients in group 2 with statistically significantly less rate in group 1 (p-value 0.0021).

Conclusion: This study concluded that there is less stricture recurrence rate after optical internal urethrotomy with clean intermittent self catheterization in urethral stricture treatment.

KEY WORDS: Urethra; Stricture; Urethral Stricture; Urethrotomy; Optical Internal Urethrotomy; Clean Intermittent Self Catheterization.

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INTRODUCTION

Urethral stricture remains complicated surgical problem for mankind since ancient time and thus the treatment remains to evolve.[1] The treatment of urethral stricture is usually not difficult but the problem lies in high rate of recurrence. Previously infections and urethral injuries were the common causes but now iatrogenic trauma, including inflammation from use of latex catheter is the leading cause of urethral stricture formation.[2] The different treatment options include urinary diversion, dilatation of the urethra, endoscopic urethrotomy with and without clean intermittent self catheterization, and open surgical repair.[3]

Direct visual optical internal urethrotomy (OIU) and urethral dilatation are the most commonly performed procedures for urethral stricture disease. This approach is appealing both for urologists and patients as it is minimally invasive.[4] Since the introduction of optical internal urethrotomy by Sachse in 1974 using a fine movable scalpel to incise urethral stricture under direct vision, this technique has been used as the primary treatment of new as well as recurrent strictures.[5] Despite good immediate results, there is a considerable risk of recurrence in 10 to 50% cases.[6] Most recurrences occur within the first year. To prevent this high rate of recurrence the concept of clean intermittent self catheterization was introduced

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by Lapides in the early 1970s who proposed that strict aseptic techniques are not necessary for clean intermittent self catheterisation.[7]

As the available evidence on this problem is very limited in our setup and there is need of more research on this topic, so the objective of this study was to compare the stricture recurrence after optical internal urethrotomy (OIU) with and without clean intermittent self catheterization (CISC) in patients with urethral stricture. Based on these results, these patients could be provided with a procedure with better outcome.

MATERIALS AND METHODS

This randomized clinical trial was conducted at the Department of Urology, Bahawal Victoria Hospital, Bahawalpur, Pakistan from July 2014 to June 2015.

A sample of 120 patients was selected through consecutive non probability sampling technique. Inclusion criteria were male patients aging 20-60 years with urethral stricture (impairment to the flow of the contrast material on retrograde and antegrade urethrogram) of up to 1.5 cm length and up to 6 months duration. Patients with traumatic urethral stricture, h/o optical internal urethrotomy, congenital or malignant strictures and those not ready to perform regular CISC after optical internal urethrotomy were excluded. Patients with ages other than 20-60 years were not eligible as the procedure was to be conducted under local anesthesia. After taking permission from Institutional Ethical Review Committee, the consent of the patients was also sought.

These patients were randomized into group 1 (treatment group) and group 2 (control group) through lottery method. In group 1, optical internal urethrotomy was done with clean intermittent self catheterization (CISC), while in group 2 optical internal urethrotomy was done without clean intermittent self catheterization.

Procedure was performed under local anesthesia using 2% xylocain gel and 3 mg intravenous inj. midazolam for sedation. After proper instillation of xylocain gel per urethra, patient was placed in exaggerated lithotomy position. Antibiotic prophylaxis was routinely provided in every patient. The procedure was performed by using 21 Fr urethrotome which was passed into the urethra up to the level of stricture and stricture was incised at five, seven and 12 o'clock with the help of cold knife till urethrotome under the guidance of a metallic guide wire till urethrotome reached into the urinary bladder. Normal saline (0.9%) was used for irrigation. Urethrotome was removed and sheath retained and guide wire passed into the urinary bladder through the sheath and a 16 Fr two way Foley's catheter passed over the guide wire which was retained for 7-10 days. All procedures were performed by a single surgeon SAT, professor of urology. All patients were followed fortnightly by the researcher for stricture recurrence till the end of three months.

Age in years and age grouping were demographic, while duration of stricture in months, category of duration of stricture, length of stricture in cm, category of length of stricture and recurrence of stricture were research variables. Age grouping was as; 20-30, 31-40, 41-50, and 51-60 years. Category of duration of stricture was < 3 months and 3-6 months. Category of length of stricture was < 1 cm and 1-1.5 cm. Category of duration of stricture, category of length of stricture, and recurrence of stricture were nominal and age grouping ordinal and were analyzed as count and percentage. The other three variables were numeric and were analyzed as mean and SD by using IBM SPSS Statistics for Windows, Version 20.0 (IBM SPSS Corp., Armonk, NY). Chi-square test of independence was used to compare the proportion of stricture recurrence between the two groups. Alpha value of ≤ 0.05 was considered as statistically significant.

RESULTS

The mean (SD) age of the sample (n=120) was 47.79 ± 7.86 (20-60) years. The mean (SD) age of the patients in treatment group 1 was 47.73 ± 7.31 years and in control group 2 was 47.91 ± 8.24 years. The distribution of age groups is presented in Table 1 with majority of patients 41 (34.17%) in the age group of 51 to 60 years.

Mean (SD) duration of stricture was 2.69 ± 1.86 months. The mean (SD) duration of stricture in treatment group 1 was 2.87 ± 1.72 months and in control group 2 was 2.28 ± 1.60 months. Category of duration of stricture showed 65 (54.17%) patients with < 3 months and 55 (45.87%) patients with 3-6 months.

Mean length of stricture was 0.91 ± 0.56 cm. The mean length of stricture in treatment group was 0.97 ± 0.42 cm and in control group was 0.83 ± 0.60 cm. Category of length of stricture showed 65 (54.17%) patients with < 1 cm and 55 (45.87%) patients with 1-1.5 cm.

Recurrence of stricture was seen in 13 patients (21.67%) out of 60 in treatment group 1 (OIU with CISC) and in 29 (48.33%) patients out of 60 in control group 2 (OIU without CISC). In other words, satisfactory outcome in group 1 (OIU with CISC group) was78.33% while in group 2 (OIU with CISC group) it was 51.67%. Chi-square test of independence showed significantly less rate of recurrence of stricture in treatment group 1 as shown in Table 2.

DISCUSSION

Earlier studies suggested that repeated urethrotomy for recurrent urethral strictures may serve to 'stabilize' the stricture, thereby increasing the cumulative success rate.[8,9] However, since the early

Table 1: Distribution of patients with urethral stricture by age groups (n=120)

Age groups (years)	Group 1 (n=60)		Group 2 (n=60)		Total (n=120)	
	No. of patients	%age	No. of patients	%age	No. of patients	%age
20-30	09	15.0	07	11.67	15	12.5
31-40	11	18.33	13	21.67	24	20.0
41-50	19	31.67	20	33.33	39	32.50
51-60	21	35.0	20	33.33	41	34.17
Total	60	100.0	60	100.0	120	100.0
Mean ± SD	47.73 ± 7.31		47.91 ± 8.24		47.79 ± 7.86	

Table 2: Stricture Recurrence in Treatment & Control groups after optical internal urethrotomy with & without clean intermittent self catheterization (n=120)

Group	Stricture Recurrence		Column Totals	Chi-square Statistic	Degree of Freedom	p-value
	Yes	No				
Group 1	13 (21) [3.05]	47 (39) [1.64]	60	9.377	1	0.0021
Group 2	29 (21) [3.05]	31 (39) [1.64]	60			
Row Totals	42	78	120			

1980s some authors have reported that a second urethrotomy had a lower success rate and that repeated urethrotomy did not improve the cumulative success rate.[10,11] Simple blind dilatation of a urethral stricture to disrupt and widen the scarred area has been practiced for many centuries.[11] Metal, gum elastic, or plastic rods of increasing diameter are sequentially passed down the lubricated urethra until an adequate lumen, usually about 8 mm in diameter, is achieved.[12] Self catheterization has been popularized to reduce the risk of recurrence of urethral stricture after urethrotomy. We have conducted this randomized controlled trial to compare the outcome of optical internal urethrotomy (OIU) with and without clean intermittent self catheterization (CISC) in patients with urethral stricture.

In our study age range was 20 to 60 years with mean age of 47.79 ± 7.86 years. The mean age of patients in treatment group 1 was 47.73 ± 7.31 years and in control group 2 was 47.91 ± 8.24 years. Majority of the patients 41 (34.17%) were between 51 to 60 years of age. These results are slightly higher than reported in two different studies by Balandi[13] and Meneghini et al[14] but much higher than reported by Mathur et al.[15]

In our study mean length of stricture was 0.91 ± 0.56 cm. The mean length of stricture in treatment group 1 was 0.97 ± 0.42 cm and in control group 2 was 0.83 ± 0.60 cm. Majority of the patients 65 (54.17%) had <1 cm length of stricture. Recently the ideal stricture length for optical internal urethrotomy has become a contentious issue. Optical internal urethrotomy is a very successful procedure in highly selected patients with short strictures (1.0-1.5 cm) and minimal spongiofibrosis. Patients who are poor candidates for initial or repeated internal urethrotomy include those with multiple and long (2-5 cm) urethral strictures.[13] It was also observed that with long strictures (> 1.5 cm), the success rate decreases and chances of recurrences increases. Therefore it needs to be carried out for more than one times along with active and passive dilatations as was observed by Meneghini et al[14] and Khan et al.[16]

In our study, recurrence of stricture was seen in 13 patients in treatment group 1 (OIU with CISC group) and 29 patients in control group 2 (OIU without CISC group) with p-value of 0.0021. In other words, satisfactory outcome in group 1 (OIU with CISC group) was78.33% while in group 2 (OIU with CISC group) it was 51.67%. Khan et al[17] has shown a significant difference in stricture recurrence after optical internal urethrotomy (OIU) with and without clean intermittent self catheterization (CISC) in urethral stricture (22% versus 46%).

A prospective randomized study compared filiform dilatation (n=106 patients) with optical urethrotomy (n=104) as treatment for male urethral strictures. The study compared the stricture recurrence rate among those who had only one treatment at study entry, those who had a repeated procedure for stricture recurrence at three months, and those who underwent a third treatment for recurrences at three and six months after initial treatment. In patients not treated before randomizationn the estimated

stricture-free rate after 1, 2 or 3 repeated treatments was approximately 60%, 40% and 0% at 24 months, and about 50%, 40% and 0% at 48 months. After a single dilatation or urethrotomy not followed by re-stricturing at three months, the estimated stricture-free rate was 55- 60% at 24 months and 50-60% at 48 months.[18]

Elhaj & Ibrahim[19] in their study has found 24 (77.41%) out of 31 patients in treatment group (optical internal urethrotomy with CISC) developed urethral stricture recurrence while six (19.35%) patients in control group (optical internal urethrotomy without CISC) had stricture recurrence ($p < 0.000$). In another randomized controlled trials done by Afridi et al[20], high rate of recurrence was observed in control group (optical internal urethrotomy without CISC) i.e. 42 patients (57.53%) in comparison to optical internal urethrotomy with CISC group i.e. 26 patients (35.61%).

Gnanaraj et al[21] assessed patients who were on self calibration comparing them to group of 49 patients on dilatation. The first group had a significantly lower re-stricture rate of 5%. Lauritzen et al[22] reported frequency of recurrence after internal urethrotomy of 9% in patients randomized to CISC. Mandal & Vaidyanathan et al[23] started five cases on CISC program after primary endoscopic treatment and during a follow-up of six to 18 months, no patient developed recurrence. Kjaergaard et al[24] randomized 21 cases to undergo CISC and 19% developed recurrence of urethral stricture within the first postoperative year in the CISC group with no complications.

CONCLUSION

This study concluded that there is less stricture recurrence rate after optical internal urethrotomy (OIU) with clean intermittent self catheterization (CISC) in urethral stricture compared to those without CISC. So, we recommend that optical internal urethrotomy (OIU) with clean intermittent self catheterization (CISC) should be used in every patient of urethral stricture for the prevention of stricture recurrence in order to reduce the morbidity of patients.

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CONFLICT OF INTEREST
Authors declare no conflict of interest.
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AUTHORS' CONTRIBUTION

Conception and Design:	MR, MSP, SAT
Data collection, analysis & interpretation:	MR, MSP, MSS, SAT
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