ORIGINAL ARTICLE

ROLE OF CLEAN INTERMITTENT SELF CATHETERISATION (CISC) IN THE PREVENTION OF RECURRENT URETHRAL STRICTURES AFTER INTERNAL OPTICAL URETHROTOMY

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Background: Urethral stricture is one of the oldest diseases Urethral dilatation Internal optical urethrotomy,were the only treatment. Clean Intermittent Self Catheterisation was introduced by Lapides has greatly decreased the recurrence of stricture. Objectives were to determine the role of Clean Intermittent Self Catheterisation (CISC) in the prevention of recurrence of urethral strictures after Internal Optical Urethrotomy and to study the frequency of any postoperative complications and tolerability for the patients associated with this procedure. **Methods:** A randomised controlled study conducted in the department of urology and renal transplantation, Institute of Kidney Diseases Hayatabad Medical Complex, Peshawar from June 2007 to June 2010. Total of 60 patients with mean age 48 years (range 20–73) were selected and randomly divided into Treatment Group (30 patients) and Control Group (30 Patients). Eight "drop out" occurred in the treatment group and four "drop out" occurred in the controlled group. All the patients were treated with Internal Optical Urethrotomy using Sachse method followed by indwelling catheter for 5 days. The treatment group was then taught to perform Clean Intermittent Self Catheterisation by inserting a Classic Neleton Catheter (No. 16 or 18) twice a day for 1 week, then once a day for another 4 weeks and then once weekly continued for one year. All the patients were followed up regularly at 1 month intervals during the first 6 months and then every 2 months for the next 6 months. Results: Total of 48 patients completed the study, 22 in the treatment group and 26 in the control group. Within the first year, 4 patients (22%) in the treatment group developed urethral stricture. In the control group, 12 patients (46%) developed urethral stricture within the first year, showing a significant difference ($p<0.01$). In the treatment group four patients developed simple UTIs while in the control group three patients developed UTIs, one with concomitant epididymitis. No other complications were noted up to one year follow up. Conclusion: Clean Intermittent Self Catheterisation is a simple and effective way of reducing stricture recurrence after Internal Optical Urethrotomy and is associated with less morbidity and is cost effective. CISC is an important modality for maintaining the normal urethral calibre.

Keywords: Urethral Strictures, Optical Urethrotomy, Clean Intermittent Self Catheterisation, Recurrence, Complications

INTRODUCTION

Urethral stricture is one of the oldest diseases known to the mankind. Urethral dilatation was often the first intervention chosen to deal with small urethral strictures, but long term results with dilatation have high failure rate. Internal optical urethrotomy, first describe by Sachse in 1974 has greatly improved the treatment of urethral strictures.[1] This procedure is now the preferred method of treatment for urethral strictures less than 1.5 cm in length and which are located in the bulbar or penile urethra.

Despite good immediate results, there is a considerable risk of recurrence between 10 and 50%.[2,3] Most recurrences occur within the first year. To prevent this high rate of recurrence the concept of clean intermittent self catheterisation was introduced by Lapides in the early 1970s who proposed that strict aseptic techniques are not necessary for Clean Intermittent Self Catheterisation.[5] Different types of catheters are used for CISC, but those who use hydrophilic catheters do better. Today patients using intermittent catheterisation range from those with neurogenic bladder, prevention of recurrent urethral strictures and diseases of men with benign prostatic hyperplasia. As contrary to the common belief complications with CISC are fewer. Significant bacteriurea is present in majority of patients whereas clinical UTIs are low.[4]

The considerable risk of stricture recurrence after Internal Optical Urethrotomy, together with great variation in the reported frequency of recurrence, have lead to several studies to assess the role of Clean Intermittent Self Catheterisation (CISC) in the prevention of recurrent urethral stricture.[6–9]

In this study we have investigated the effect of Clean Intermittent Self Catheterisation on the frequency of recurrence of urethral stricture in a randomized, controlled manner. An analysis of the occurrence of complications following Clean Intermittent Self

Catheterisation (CISC) was made and the acceptability of the treatment to the patients was evaluated.

MATERIAL AND METHODS

Total sixty men were included in the study, which was carried out between June 2007 to June 2010 at the Department of Urology and Renal Transplantation, Institute of Kidney Diseases, Hayatabad Medical Complex Peshawar. These patients were randomly divided into Treatment Group (30 patients) and Control Group (30 Patients). In the treatment group, 23 patients were treated for their first stricture while 7 patients were treated for a recurrent stricture. In the control group, 25 patients were treated for their first stricture while 5 patients were treated for a recurrent stricture.

Patients over the age of 18 years who were treated with internal urethrotomy, using Sachse's method, with strictures localized to the bulbar or penile urethra were included in the study. Criteria for exclusion were cancer of the prostate, tumours of the bladder requiring check cystoscopies and an inability to learn or perform Clean Intermittent Self Catheterisation for any reason. The mean age at the time of operation for treatment group 37.3 ± 13.9 years (range 22–69 years), while for control the mean age was 42.5 ± 15.6 years (range 20–73 years). The probable aetiologies of the urethral strictures of both groups are shown in the chart below.

In addition to history, clinical examination and routine laboratory investigations, radiological evaluation including retrograde urethrogram (RUG) and cystogram were performed to evaluate the site and size of the Urethral Stricture. Uroflometry was performed in all patients before the start of treatment to record the maximum flow rate. Urinary tract infections (UTI) were treated in all patients according to urine culture sensitivity before performing Internal Optical Urethrotomy. Patients were randomised into two groups. One group was allocated to perform Clean Intermittent Self Catheterisation while the other group attended follow-up only.

A standard Internal Optical Urethrotomy was performed using Sachse method with the patient in lithotomy position under general or spinal anaesthesia. All the procedures were carried out by a single surgeon to avoid the operative technique bias. At operation, the stricture was incised at 12 O'clock under direct vision, using a Storz Optical Urethrotome incorporating a Sachse knife. An indwelling silicone catheter, usually 18 Fr, was inserted in each patient following surgery, and remained in position for 5 days. After removal of the indwelling catheter, the treatment group was taught to perform Clean Intermittent Self Catheterisation by inserting a Classic Neleton catheter (No. 16 or 18) twice a day for 1 week, then once a day for another 4 weeks and then once weekly continued for one year.

The treatment and control groups were both examined as out-patients every 1 month during the initial 6 months, every 2 months for the next 6 month. The patients were asked about treatment problems at each follow-up visit. Urine flow was measured by Uroflometry, and a urine sample was taken for culture and sensitivity if signs of urinary tract infection were noted. Standard antibiotic treatment was started if there was a growth of $>10^5$ bacteria/ml urine. If a patient had no subjective symptoms of urethral stricture and if he produced a urine volume of at least 100 ml on a non-flattened curve with a maximum flow of more than 15 ml/s, he was considered to be stricture-free. If the flow was less than 10 ml/sec in repeated measurements, then the patient was admitted for cystourethroscopy.

On the result of cystourethroscopy (free passage of the scope to the bladder) a diagnosis of recurrence was determined. Thus, each patient was classified by objective methods at each follow-up as having a recurrence or being stricture-free. Patients who could not produce a satisfactory flow but who did not want to undergo a urethroscopy, those who despite repeated requests did not come for follow-up and those who wanted to withdraw from the study were classified as 'drop-outs'.

All the data was collected on a structured Performa and then saved in the computer including pictures of the pre- and postoperative radiological investigations the result of pre and post operative Uroflometry and then the data was processed using SPSS-10.

RESULTS

Total of 60 patients were included in the study 30 patients in the treatment group and 30 patients in the control group. Eight 'drop-outs' occurred in the treatment group: four patients did not attend follow-up despite repeated invitations, one patient died of myocardial infarction 3 moths after follow up, two patient were unable to perform Clean Intermittent Self Catheterisation properly even after repeated demonstration and one patient withdraw from the study after six months due to the development of pain.

There were four 'drop-out' in the control group. One patient did not attend follow up, one patient was an Afghan refugee and migrated back to Afghanistan four months after treatment and was having good urine flow, while two patients were having decreases urine flow and a stricture like curve on Uroflometry but were not willing for cysto-urethroscopy. Thus, total of 48 patients completed the study, 22 in the treatment group and 26 in the control group.

Within the first year 4 out of 22 patients (22%) in the treatment group developed urethral stricture. In the control group, 12 out of 26 patients (46%) developed

urethral stricture within the first year, showing a significant difference ($p<0.01$). In the treatment group, one patient had repeated positive urine cultures while three patients had urine culture positive for a single time but there were no cases of epididymitis. In the control group, three patients had repeated positive urine cultures while one patient had a single positive urine culture with concomitant epididymitis. All of the patients who completed the prescribed CISC program considered the method fully acceptable and all were able to perform CISC at home with no problems. The results are summarized in **Table-1**.
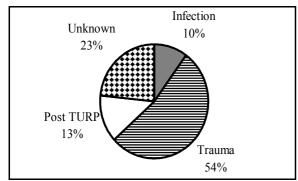

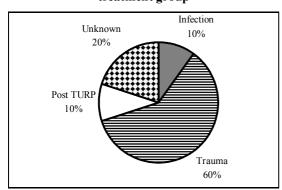**Chart-1: Aetiology of Urethral Stricture in the treatment group**

Chart-2: Aetiology of Urethral Stricture in the control group.
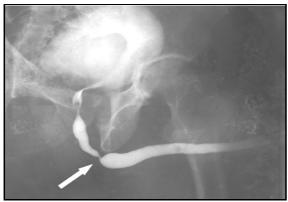

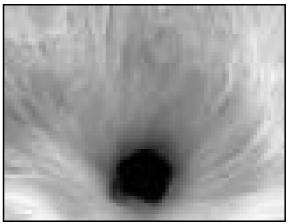**Figure-1: Retrograde urethrogram demonstrating, showing bulbar urethral stricture**

Figure-2: Cystoscopic view of urethra, showing bulbar urethral stricture

Table-1: Summary of the results

Characteristics	Treatment Group	Control Group
No of patients completed the study	22	26
Drop Out	8	4
Primary Stricture	23	25
Recurrent Stricture	7	5
Mean Age	37.3±13.9 year (range 22–69 year)	42.5±15.6 year (range 20–73 year)
Stricture Recurrence after Treatment	4 out of 22 patients (22%)	12 out of 2 patients (46%)
No of simple UTI during follow-up	4	3
No of UTI with Epidydemitis	0	1

DISCUSSION

This is the first randomised controlled study at our institute about the role of Clean Intermittent Self Catheterisation in the prevention of recurrence of urethral stricture. Since its introduction by Lapides *et al*[5] (1972), Clean Intermittent Self Catheterisation has earned general recognition in the management of neurogenic bladder dysfunction as well as in the prevention of urethral strictures after Internal Optical Urethrotomy.

The study has demonstrated a slightly high frequency of recurrence compared to international literature[9,10], probably because all of the patients were examined carefully using objective criteria. In the treatment group, 22% patients developed a recurrence within the first year compared with 46% in the control group. The recurrence-free period differed significantly between groups but CISC did not prevent recurrence in all patients. Those patients who quickly learned CISC were largely satisfied with the procedure and more than a half continued to perform CISC on their own initiative even after completion of treatment. None of these patients developed a stricture during the follow-up period, however long term follow up is needed to evaluate the long-term effect of Clean Intermittent Self Catheterisation in the prevention of urethral stricture.

The large number of drop-outs from the treatment group (8 drop-outs) indicated that not all patients could perform CISC easily. Somatic factors seldom give problems, implying that the difficulties were mainly psychological when a patient did not complete the trial period. There were no serious complications resulting from CISC. Compared with indwelling catheter, CISC has considerable social advantages and patients can easily handle CISC catheters at home. Prolonged treatment with an indwelling catheter may be more traumatising to tissues than intermittent passage through the urethra of a soft catheter.[11] Clean intermittent self-catheterisation carried out following operation for urethral stricture may significantly reduce costs by preventing recurrence of stricture.[6]

The overall goal of treating urethral stricture is to resolve the obstruction and its associated symptoms while maintaining continence. The simplest way to treat urethral stricture is by Internal Optical Urethrotomy. However, recurrence is not rare, and dilatation is not without risk.[12] Overzealous dilatation may cause false passage, bleeding and extravasations might lead to further fibrosis and recurrence of stricture. Urinary tract infection is the most important, but prevention is possible in the short-term. Trauma from catheterisation occurs regularly, but lasting effects are more limited. The most important way to prevent all these complications is good education of all involved in Clean Intermittent Self Catheterisation, good patient compliance, the use of a good quality catheter and the application of a good catheterisation technique.

CONCLUSION

Clean Intermittent Self Catheterisation is a simple and effective way of reducing stricture recurrence after Internal Optical Urethrotomy. It is associated with less morbidity and is cost effective. CISC is an important modality for maintaining the normal urethral calibre.

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