Original Article

The Comparative Role of Optical Urethrotomy with and without Clean Intermittent Self Catheterization (CISC) in Urethral Stricture

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ABSTRACT

Objective: To assess the comparative role of optical urethrotomy in urethral strictures with (CISC) clean intermittent self catheterization and with out CISC.

Study Design: comparative cross sectional.

Place and Duration of Study: This study was conducted at the Department of Urology Peoples University of Medical and Health Sciences for Women. Nawabshah. Sind from July 2008 to June 2010.

Materials and Methods: The patients were thoroughly evaluated. All patients were subjectively examined pre-operatively by detailed history and complete clinical examination. Patient's satisfaction from his urinary stream and the sense of satisfactorily emptying of bladder were the main subjective tool. While the Uro-Flow Metry and Post-voiding residual urine were the main objective tools in both pre and post operative period. Under the spinal anesthesia optical internal urethrotomy was done. After removal of catheter all patients were divided equally in two groups.

Group A. Patients without clean intermittent self Catheterization (CISC).

Group B. Patients on clean intermittent self catheterization (CISC).

Results: All hundred (100) subjects were divided in two groups. Group A &B.Fifty (50) in each group. After third month seven (07) patients of group A, showed decline uro-flow Metry. Two (02) subjects in fifth month were submitted for the second session of optical urethrotomy. In Seventh month three (03) patients presented acute retention of urine all three were submitted for second session of optical urethrotomy. In 12th month five patients more submitted for the repeat session of optical urethrotomy regarding the group B patients. In the seventh month (05) patients presented with disturbed flow metry. In tenth month two (02) while in twelth month three (03) patients were needed to the second and third sessions of urethrotomy respectively.

Conclusion: we conclude that optical urethrotomy with CISC is more effective treatment modality for the urethral strictures than the optical urethrotomy without CISC.

Key Words- Optical urethrotomy , urethral stricture, comparative treatment, clean intermittent self catheterization.

INTRODUCTION

Until 30 years ago stricture of urethra were managed by the traditional periodic dilatation, supplemented from time to time by blind internal urethrotomy with Otis instrument to keep the channel open. Reconstructive urethral surgery though carries higher success rate but needs expertise and is not the first line treatment of every stricture.[1] The urethral stricture begins as a fibrosing lesions of urethral mucosa with lumen reduction and resultant in symptom complex. A 50% reduction of urethral circumference reduces the lumen size about 25% and produces significant urodynamic disturbance. [2] Urethral stricture diseases remains the complicated problem for the mankind since thousands of years. No one technique is suitable for all types of the stricture and the surgeon should be familiar with the different techniques and choose the most suitable one according to the case he deals with.[3] Urethral strictures are a frequent source of lower urinary tract disorders in adults, such as urinary tract infection, acute urinary retention, high-pressure voiding leading to secondary bladder thickening and irritability and even bladder diverticulae or perineal fistulae and abscess [4]. Blunt perineal trauma, urethral catheterization or instrumentation and sexually transmitted diseases are the most frequent causes of strictures. However, most causes of urethral strictures remain unknown, but they are probably the result of a remote unrecognized perineal trauma experienced during childhood.[5] Surgical treatments of urethral stricture diseases is a continually evolving process, and currently there is renewed controversy over the best means of reconstructing the urethra. Moreover, the superiority of one technique over another has not yet been clearly defined. Urologists must be familiar with the use of numerous and various surgical techniques to deal with any condition of the urethra during surgery. [6] The aim of treatment is to restore the urethral continuity. The periodic dilatation has been reported the oldest mean of treatment. Later on it was supplemented by blind internal urethrotomy.[7] In the last thirty years, clean intermittent catheterization of urinary bladder has proven to be one of the most important advances in

Urology. The cost effectiveness of different catheters and the lack of education limit the use the of this procedure.[8] Throughout medical history, the treatment of urethral strictures ranged from catheterization, the insertion of bogies to different methods of dilation, blind internal urethrotomy, and open surgery. The rise of endoscopy in the 19th century added the possibility of direct vision internal urethrotomy to this therapeutic spectrum. The development of this endourologic method is recapitulated from the first report in 1865 to the gold standard of cold knife urethrotomy in 1971 and later modifications e.g. advanced laser techniques.[9] The results of internal urethrotomy were more favorable when the operation was performed in a solitary, short (less than 2 cm) non-infected stricture of the proximal urethra. The poor results (38%) were reported in cases of extensive strictures situated in the distal urethra or in patients with a history of urethral surgery. [10] Endoscopic treatment should be considered the first line procedure for all post-traumatic posterior urethral strictures. The morbidity of open surgery can be avoided in 61% of patients. Hospital stay, loss of work, morbidity and related complications are also markedly decreased with Endoscopic therapy. [11] Martov AG assessed the efficacy of internal urethrotomy made in total of 802 patients aged from 16 to 89 years (mean age 58.6 years) with urethral stricture in 1994-2004. Internal optic urethrotomy was made in 733 cases with a cold knife, in 52--with electric knife and in 17 cases--with laser. He concluded that internal optic urethrotomy is an effective therapeutic method. After primary urethrotomy recurrences of the strictures to be re-operated reach 19.6%. These can be successfully managed by endoscopic re-operations and rehabilitation measures like CISC (clean intermittent self catheterization.) [12] The direct vision cold knife internal urethrotormy (DVU) was found simple, quick and cost effective mode of operation in urethral strictures in maintaining acceptable voiding patterns. Direct vision cold knife internal urethrotomy is a simple, cost effective and versatile method of treatment in urethral strictures which is attractive where resources are scarce. [13]

MATERIALS AND METHODS

The patients were collected from the Department of Urology Dialysis and Lithotripsy centre at Peoples Women medical University for girls Nawab shah. Shaheed Benazir Abad Sind.

The patients were thoroughly evaluated subjectively and objectively in pre and post operative period. All patients were subjectively examined pre-operatively by detailed history and complete clinical examination. Patient's satisfaction from his stream and the sense of satisfactorily emptying of bladder were the main subjective tool in pre and postoperative period. While the Uro-Flow Metry i.e. of urinary flow rate per second and ultrasound scan for the measurement of Post-voiding residual urine were the main objective tools in both pre and post operative period. For the assessment of renal function, serum creatinine was done in all those cases who presented with chronic retention of urine. To decide the length and site of stricture preoperatively ante-grade and retrograde urethrogram were done. Before surgery all patients were submitted for the anesthetic assessment. Under the spinal anesthesia optical internal urethrotomy was done with cold knife. After surgery 16 Fr Foley catheter was placed in all cases through half moon sheath. The remained catheterized for two to three weeks. After removal of catheter all patients were divided equally in two groups.

Group A: Patients without clean intermittent self Catheterization (CISC).

Group B: Patients on clean intermittent self catheterization (CISC).

A regular follow up was established for both groups. A first follow-up visit was after 15 days. Later on follow up was done on monthly basis. The following subjective and objective assessment was done in each follow-up visit. Patient's satisfaction from his stream and the sense of satisfactorily emptying of bladder, (UFM) Uro-Flow Metry and PVR. Post-voiding residual urine. After the catheter removal a base line level of both these variables .I.e. Uro-Flow Metry (>12mls/sec) and Post-voiding residual urine (<50c.c) was set and further results in each follow-up were compared with it. Female sex and pediatric age below 14 years were excluded from this study.

RESULTS

All hundred (100) subjects, fifty (50) in each group i.e. group A & B were objectively assed in each follow-up. The results up to third month of the optical urethrotomy were remained almost same as those of the base line level i.e. (Uro-Flow Metery >12mls/sec) and (Post-voiding residual urine <50c.c) in both groups. After third month seven (07) patients of group A, showed decline uro-flow Metry i.e. from base line of >12mls/sec to average flow of 10mls /sec but with maintained post voided residual volume of base line level. Though the total time in uro-flow Metry in these subjects were increased but these seven subjects successfully emptied their bladder. While the fifty (50) subjects of group B, weekly performing the Clean Intermittent Self Catheterization (CISC), maintained their base line level without any change in uro-flow metry and post voided residual volume. In fifth month, among group A, twelve (12) patients presented with the sign of bladder out let obstruction. Two (02) subjects out of these twelve were in acute retention of urine. Due to failed urethral catheterization Supra-pubic catheterization was done in both cases of urinary retention. Later on these two subjects were submitted

for the second session of optical urethrotomy. While remaining ten (10) patients presented with decline in urinary flow rate, than the baseline level i.e. <10mls/sec and increased post voided residual volume i.e. more than 60c.c. In seventh month of postoperative period three (05) patients presented with complain of retarded stream and straining in micturation. Out of these five patients three (03) subjects went in to acute retention of urine which was dealt by supra pubic catheterization. Later on these three subjects were also submitted for second session of optical urethrotomy. Eight (08) more patients, among the group A, in the 9th month of first session of optical urethrotomy, presented with the decreased urinary flow rate and increased post voided residual volume. In the last month of follow-up period i.e. the 12th month of optical urethrotomy three (03) patients along with two (02) subjects, having second session of optical in the 5th month, total five (05) more patients of group A presented with the signs of bladder out let obstruction. In All of these five subjects urinary flow rate was below 6mls/sec and post-voided residual urine was >100c.c. on the basis of these findings all five subjects were submitted for the second session in three patients while third session of optical urethrotomy in two subjects was given. only twenty (22) out of fifty (50) subjects of group A maintained the base line level of their urinary flow rate and post voided residual volume i.e.>12mls/sec and <50c.c respectively up to the last follow-up month. All the fifty (50) subjects belonging to the group B maintained their base line level of urinary flow rate and the status of post-voided residual urine up to the sixth post operative month. In the 7th post-operative month five (05) patients presented with decreased flow rate than the base line level i.e between 10 to 12mls/sec but the post voided residual fraction of urine in all these five cases remained below 50.c.c. which was the initial base line level. Another two (02) patients in group B presented in acute retention of in 10th month of follow-up. Both were submitted for the second session of optical urethrotomy. Six (06) patients of this same group presented with the signs of bladder out let obstruction in the last month of follow –up i.e. 12th month. In three (03) patients out of these six subjects urinary flow rate was less than 10 mls/sec while post-voided residual urine was more than 100c.c. These three (03) subjects were submitted for the second session optical urethrotomy followed by Bi-weekly CISC. Other three (03) subjects among these six patients were maintaining their residual urine below 100 c.c and their flow rate was around 10 mls/sec. Out of 50 patients of group B total thirteen (13) subjects' (26%) presented with signs of bladder out let obstruction after having first session of optical urethrotomy followed by CISC. Out of these thirteen patients five (05) subjects received third session of optical urethrotomy to maintain their base line level of both variables i.e. residual urine and uro flow metry.

Table No.1: A Base Line Level of Objective Variables

Variable	**Base line level**
URO-Flow Metry	Average urinary flow rate of > 12mls/sec.
Abdominal Ultra Sound	Post-voided residual urine <50 c.c

Table No.2: Groups

Group	Description	No. of Patients	Total
A	Optical urethrotomy without CISC.	50	
B	Optical urethrotomy with CISC.	50	100

Table No.3: Groups (A)

Follow-up month	Response to optical urethrotomy.	No: of Session	total Patients
3rd month.	Base line remained maintained.	1st	All 50 pts.
4th month	Decreased AVF— 10mls/sec But maintained PVR.	1st	07
5th month	02 subjects AROU 03 AVF 10mls/sec & PVR 60-100	2nd	05
7th month	03 subjects AROU.	2nd	03
9th month	Decreased AVF<10mls/sec PVR around 100 c.c	1st	08
12th month	03 patients of 7th month 02 patients. AVF <6mls/sec.PVR > 100 c.c	3rd 2nd	05

DISCUSSION

A thorough understanding of urethral anatomy and etiology of urethral stricture followed by an effective treatment are very crucial if successful outcome is required.[14] Clean intermittent self-catheterization is often proposed to patients with bladder emptying disorders. [15] In our comparative series all 50 patients of group A were submitted for the optical urethrotomy without CISC. Only 22 (44%) out of 50 could maintain their base line level of residual volume and uro-flow metry up to the end of first year with out any sign of bladder out let obstruction or any further session of

urethrotomy. Among the remaining 28 subjects (46%) of group A, 07 patients needed two session of optical urethrotomy while 03 patients needed third session of optical in order to maintain the base line level of the of both variables up to the end of 12th month.

Table No.4: Groups (B)

Follow-up month	Response to optical urethrotomy.	No: of session	Total patients
Up to 6th month.	Maintained their base line level of both variables..i.e. AVF &PVR	1st with CISC	50
7th month.	AVF 10-12mls/sec but Maintained PVR of base line.	1st with CISC	05
10th month.	02 Patients in AROU (Acute retention of urine)	2nd with CISC.	02
12th month.	03 patients AVF <10 & PVR > 100 03 pateints AVF 10 & PVR < 100.	2nd with CISC CISC	06

Table No.5: Sessions of Optical Urethrotomy in Group A & B

Group	No: of session.	No: of patients.	Total.
A	1st 2nd 3rd	40 07 03	50
B	1st 2nd	45 05	50

The 50 patient of group B after first session of optical urethrotomy were put on regular Bi-weekly CISC. With this set up only 13 (26%) out 50 subjects presented with the signs of failure of optical urethrotomy. Out of these 13 only five (05) patients needed second session of optical urethrotomy. This reflects that the efficacy of optical urethrotomy with CISC is more superior than without CISC in terms of maintaining the base line of both variables and decreases the recurrence rate of stricture urethra. We in our series put the patients of group B on CISC for twice in week. Greenwell TJ et al, out of 126 patients with urethral strictures having optical urethrotomy put 50 patients Bi-weekly on CISC.[16] The concomitant use of self catheterization increases the cost effectiveness of this procedure.[17] van et al in his series has emphasized that education of the patient for the adherence to clean intermittent self catheterization and he recommends the favorable out come of CISC in bladder out let problems.[18] Rijal A in his study of 310 urethral strictures patients concluded that optical urethrotomy with CISC is more effective in preventing the recurrence of urethral strictures as compared to the Endoscopic procedure done alone.[19] Duloca V describe the importance of the selection of the surgical procedure for the urethral stricture in order to have successful out come especially he describe the place of urethraplasty.[20]

CONCLUSION

From our study of 100 patients we conclude that the optical urethrotomy with clean intermittent self catheterization (CISC) is comparatively more effective treatment of urethral strictures than with out CISC. It lowers the recurrence rate of urethral stricture which is higher after the optical urethrotomy without CISC.

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