

Management of Post Traumatic Posterior Urethral Stricture; Internal Urethrotomy Verses Perennial Urethroplasty

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Objective: To compare the efficacy and cost effectiveness of cold knife optical internal urethrotomy with perineal urethroplasty (excision and end to end anastomosis) in the management of post traumatic short posterior urethral stricture.

Design: an observational prospective study. **Place and duration of study:** the study was performed in the department of urology and kidney transplantation Services hospital/post graduate medical institute Lahore, from September 1997 to December 1999. **Patients and methods:** Forty male patients of post traumatic posterior urethral stricture revealed by their urethrogram were included in the study. Patients were divided in two groups randomly (group A & group B). After complete evaluation, patients of group A were managed by internal urethrotomy, while those of group B by perineal urethroplasty. Follow up was done at 1,3,6,9 & 12 months. **Results:** age range of the patients was 20 to 59 years with the mean age of 35.5 years. Road traffic accident was the main cause (82.5%). After facing the traumatic urethral injury, there was history of attempted Foley catheterization (47.5%), bouginage (15%) and intervention by rail road technique in 10% of the patients. All patients were with supra pubic catheter because of failure to void. The length of stricture varied from 0.5 to 2.0 cm (mean 1.4 cm). Clinical response at the end of the study in group A & B was "good" in 58.82% & 66.66%, "satisfactory" in 23.52% & 22.22% and "poor" in 17.64% & 11.11% respectively. The mean cost of operation, hospital stay and loss of working hours were less in group A as compared to that of group B. **Conclusion:** The results of perineal urethroplasty are comparatively better than optical urethrotomy. The other differences of the two procedures lie in operative time cost of the operation and mean hospital stay. It is concluded that optical urethrotomy is an acceptable alternative to urethroplasty in patients with short post traumatic posterior urethral stricture.

Key words: Traumatic posterior urethral stricture, internal urethrotomy, urethroplasty

Posterior urethral stricture is an obliterative process in posterior urethra that has resulted in fibrosis and is generally the effect of distraction in that area¹. Most urethral injuries are caused by motor vehicle accidents or falls. Which causes traumatic disruption of the membranous urethra, stricture is often a sequel^{2,3}. The management has been the most formidable challenge of stricture surgery, and remained a major controversy. The aim of treatment is to achieve and maintain a normal urethral caliber. Up-to the middle of twentieth century, urethral dilatation and blind internal urethrotomy remained the treatment of choice for posterior urethral stricture. While suprapubic cystostomy was the only alternative⁴. First optical urethrotomy in U.K was performed in 1975⁵. Stricture excision and end to end anastomosis regarded as the gold standard treatment for posterior urethral stricture⁶.

This study was conducted to compare the efficacy and cost effective-ness of the two treatment modalities(optical internal urethrotomy and excision and end to end anastomosis).At the end we recommended optical internal urethrotomy as first treatment of choice for short post traumatic posterior urethral stricture. And urethroplasty reserved for those who undergo repeated urethrotomy over short period of time.

Patients and methods:

40 male patients of post traumatic posterior urethral stricture above age of 20 years were included in this study. Patients were divided randomly in two groups 'A' & 'B' (20 patients in each group). Patients of group A were

managed by optical internal urethrotomy, while of group B, by excision and end to end anastomosis. Patients with history of neurological deficit, diabetes mellitus, iatrogenic, infective or malignant stricture, and stricture more than 2 cm were excluded from the study. All patients were assessed by history, clinical examination and investigations including routine blood examination, urinalysis and culture sensitivity, blood urea, serum creatinine, blood grouping and cross matching, retrograde urethrogram, antigrade cysto urethrogram and ultrasound (X-ray chest and ECG for patients of more than 40 years). After complete evaluation and pre-operative prophylactic antibiotic, one of the two procedures was performed under general anesthesia.

Patients of group A under went optical internal urethrotomy with cold knife. After incising the stricture, 16 Fr, two ways Foley catheter passed per urethra. An other two way Foley catheter passed supra-pubically. Suprapubic catheter clamped after the procedure. The urethral catheter was removed after two weeks, and if patient voided with adequate stream, suprapubic catheter was also removed then. Patients were put on CISC (Clean Intermittent Self Catheterization) daily for one week, on alternate days for fortnight and then once in a week to once in a month, depending upon clinical response of the patient.

Patients of group B were managed by one stage urethroplasty by stricture excision and end to end anastomosis, through perineal approach. The anastomosis performed with 3/0 vicryl by applying 3-6 interrupted

sutures over 16Fr. Foley catheter. A drain placed and wound closed in layers. Drain removed after 48 hrs. And per urethral Foley catheter after 2 weeks. The supra pubic catheter which was clamped after the procedure was also removed ensuring the adequate voiding after removal of urethral catheter.

All patients were advised to follow up at out patient department at 1,3,6,9, & 12 months. They were instructed to come earlier if. develop straining, weak stream or any other complication. At follow up patients were evaluated on the basis of history (including voiding, continence, impotence, and urinary complaints), examination and investigations (including retrograde urethrogram, ultrasound, and max. flow rate and post micturition residual urine).

Patients were assessed for clinical response at follow up. Response was labeled as "good" if force and caliber of stream remained adequate, no internal urethrotomy was repeated and patient voides as voiding before injury. Response was "satisfactory" if patient voides with some difficulty, with thin stream and underwent one additional urethrotomy. Response was labeled as "poor" if patient is unable to void with stream and urethrotomy was repeated more than once. Cost effective ness of both the procedures was assessed by considering cost of drugs, hospital stay & loss of working hours.

Results:

Out of 40 male patients of short (up to 2.0 cm) post traumatic posterior urethral stricture, thirty two (80%) were belonging to urban while eight (20%) from rural areas. Age range was 20 to 59 years with mean age of 35.5 years. Road traffic accident was the major cause found in 82.5% ,other causes includes, fall of bricks on patients (5%) and fall from height (12.5%).After facing the urethral trauma, out of the 40 patients, 19 (47.5%) had history of attempted Foley catheterization, 6 (15%) had history of bouginage, while rail road technique was tried in 4 (10%). All patients were having suprapubic catheter, with history of urinary retention after trauma, while 28 (70%) had history of bleeding per urethra. Duration of urethral injury ranged from one week to 6 months with mean duration of eight weeks. Urethrogram revealed stricture involving membranous urethra in all patients. The stricture length ranged from 0.5 to 2.0 cm (mean 1.4 cm).

Retrograde urethrogram revealed adequate caliber of urethra in all patients ,at follow-up of one month but three patients underwent once repeated urethrotomy in group A while none in group B .At 3 months follow-up, once repeated urethrotomy was performed in 4 (20%) patients while 1(5%) patient required twice repeated urethrotomy in patients of group A. In patients of group B only 1(5%) patient underwent once repeated urethrotomy and none of the patient required frequent urethrotomy. At six months follow up, 2 patients required once repeated urethrotomy and same number required twice repeated urethrotomy in

patients of group A, while this figure was 3 and 1 respectively in patients of group B. At nine month follow up, three patients underwent once repeated urethrotomy and same number required twice repeated urethrotomies in patients of group A. While in group B once repeated urethrotomy was performed in 2 patients and the same number of patients required the procedure more than once.

At one year follow up, 17 patients were available in group A and 18 in group B. The clinical response at this time in patients of both the groups is shown in table 1.

The mean peak flow rate after internal urethrotomy was 14.5 ml/sec. (range 12 to 21 ml/sec), while it was 16 ml/sec (ranging from 12 to 24 ml/sec) after perineal urethroplasty. Mean post micturition residual urine in group A was 18 ml (range 10-50ml) while it was 16 ml in patients of group B (range 5-40 ml).

The mean operative time noted for internal urethrotomy was 16 minutes (range 12-35); it was 65 minutes (range 50-90) for perineal urethroplasty. The mean hospital stay for patients of group A was 2.5 days (range 2-4); while it was 8 days (range 6-11) for patients of group B. The mean cost of the procedure in group A was Rs. 300 (range 200-500), while it was Rs. 950 (range 700-1500) in patients of group B. The average loss of working hours after internal urethrotomy was 3 weeks. It was shorter than that noted after urethroplasty 7 weeks.

Table 1: Clinical response at 12 months follow up

Response	Group A(n=17)	Group B (n=18)
Good	10(58.82%)	12(66.66%)
Satisfactory	4(23.52%)	2(22.22%)
Poor	3(17.64%)	2(11.11%)

Discussion

We selected cases of traumatic posterior urethral stricture because the number of traumatic stricture is rising in our country⁷. The mean age of the patients in our study was 35.5 years. High incidence of urethral strictures in third and fourth decades has been reported⁸. All patients presented with suprapubic cystostomy and had history of urinary retention. Per urethral bleeding was present in 28 (70%), the results are compare-able to other local studies⁹. The commonest cause, road traffic accident found in 82.5%, in an other study it was 68%¹⁰.

Both procedures, internal urethrotomy and perineal urethroplasty are recommended. Endoscope management of stricture up to 2.5 cm long is recommended^{11,12}. One stage perineal urethroplasty is considered as the gold standard treatment for post-traumatic strictures and recommended for short stricture to get high success rate¹³.

Following surgery, patients were catheterized for 2 weeks and were put on self catheterization after the removal of urethral catheter. Self catheterization does play a role after the procedure^{14,15}. At one year follow-up, once repeated urethrotomy was performed in 4(23.52%) patients and twice repeated urethrotomies in 3(17.64%)

patients of group A, while this figure for group B was 4 (22.22%) and 2 (11.11%) respectively. The frequency of once repeat urethrotomy in and other local study at nine months follow-up was 23%, and frequent repeated urethrotomies were 7.7%⁹. The results are comparable to our study.

At the follow-up of one year, the mean peak flow rate was 14.5 ml/sec in group A. Where as in group B, it was 16 ml/sec. Difference of peak flow rate was insignificant. In other studies peak flow rate after optical urethrotomy has been reported as high as 17 to 25 ml/sec while in studies following perineal urethroplasty mean peak flow rate ranges from 18 to 26 ml/sec. Mean post-voided residual urine at 12 months after optical urethrotomy was 18 ml. Where as in patients who underwent perineal urethroplasty, it was 16 ml. This residual urine was not significant¹⁶. At 12 months follow-up the response was found good in 58.82%, satisfactory in 23.52% and poor in 17.64% of group A. These figures for group B were 66.66%, 22.22% and 11.11% respectively, different studies have mentioned the success rate comparable to our studies [9,17,18] The success rate after perineal urethroplasty is high^{8,19}.

Cost is a major factor, and majority of patients who came to teaching hospital belonged to the poor socio economical group. Mean estimated cost of operation was less in group A. The difference was because of use of vicryl sutures during repair, use of antibiotics and longer hospital stay in group B. Internal urethrotomy is cost effective when compared with perineal urethroplasty, due to short hospital stay, less operative time, low cost of material and less working hour's loss, where as urethroplasty is expensive, technically demanding and time consuming^{7,14,20}.

Conclusion:

It is concluded that optical urethrotomy is an acceptable alternative to urethroplasty in patients with short (up to 2 cm) post-traumatic posterior urethral stricture. Optical internal urethrotomy may be regarded as first line management of short post-traumatic posterior urethral stricture. Failure of this treatment modality may be dealt with perineal urethroplasty. This preliminary study of interventional therapeutic trial may act as a guide line for future research to reach a definite conclusion.

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