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Original Research Article

COMPARISON OF RECURRENCE OF URETHRAL STRICTURE AFTER INTERNAL OPTICAL URETHROTOMY WITH AND WITHOUT POST-OPERATIVE ORAL STEROIDS IN DISTRICT DERA ISMAIL KHAN

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Abstract: *Urethral stricture is one of the most common diseases in urology. The urethral structure is the narrowing of the urethral lumen due to spongiofibrosis. It is notorious for its recurrence and accounts for the major burden on the Urology department. Internal optical urethrotomy is considered the first line of treatment for urethral stricture. When combined with clean intermittent self-catheterization, and Intralesional injections, better results could be obtained. This study compares the recurrence of urethral stricture after internal optical urethrotomy with and without post-operative oral steroids in the population of Dera Ismail Khan. The study was a non-randomized control trial done in the Urology Department, DHQ/MTI-TH, Dera Ismail Khan, Pakistan, from January 2021 to June 2021. The patients from the urology outdoor and emergency of DHQ Teaching Hospital were included in the study. A total of 152 patients were divided by lottery method into two groups' an experimental group and Control group, each containing 76 patients. After losing follow-up, the remaining patients who completed the study were 128. The patients in both groups underwent internal optical urethrotomy with a cold knife. The experimental group of patients received oral steroids for 4 weeks. The control group didn't receive steroids after the procedure. The mean age in the experimental group was 41 ± 09 years, while in the control group, it was 36 ± 13 years. After 6 months, the recurrence was observed in 12 patients (18.75%) in the experimental group and 25 in the control group (39.06%). These results showed a statistically significant difference in recurrence rate between these two groups with a p-value of 0.0123. Based on the results, it can be concluded that the use of oral steroids after internal optical urethrotomy decreases the risk of recurrence of urethral stricture significantly.*

Keywords: Urethral stricture; internal optical urethrotomy; oral steroids; Adult population

Introduction

Overactive bladder syndrome (OAB) is a group of Urethral stricture is one of the most common diseases in urology. Urethral stricture is the narrowing of the urethral lumen due to spongiofibrosis (Dahl and Hansen, 1986). It is notorious for its recurrence and accounts for the major burden on the Urology department. In the past metallic boujies were used for urethral dilatation and were associated with frequent complications. Otis urethrotomy was also used, which is now obsolete due to drastic complications, including severe urethral trauma/excessive bleeding (van Leeuwen et al., 2011) , holmium laser endourethrotomy (Bullock and Brandes, 2007; Dutkiewicz and Wroblewski, 2012) is the latest procedure used and has good results. Due to expensive equipment, many centers lack this facility. Internal optical urethrotomy is one of the safest methods used for decades. American Urological Association conducted a survey that stated that for the management of anterior urethral stricture, 86% of American urologists prefer IOU (Bullock and Brandes, 2007). It is considered the first line of treatment for urethral stricture. Internal optical urethrotomy (IOU) success rate in different studies is almost 65-70 percent. Indication for Internal optical urethrotomy is stricture that is less than 1.5 cm with minimal spongiofibrosis (Dutkiewicz and Wroblewski, 2012) though it is a simple and effective way to manage urethral stricture disease, it has high recurrence rates. Different Studies have been conducted to improve the success rate of this

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procedure when combined with other therapeutic remedies like clean intermittent self-catheterization (Ergün et al., 2015) (CISC), IOU combination with intralesional steroid (Ergün et al., 2015; Kumar et al., 2014) or mitomycin-C injections (Kumar et al., 2014; Zar, 1999). The study objective was to evaluate the recurrence rate of urethral stricture after internal optical urethrotomy with and without post-operative oral steroids in the Dera Ismail Khan adult population.

Methodology

The study was a non-randomized control trial done in the Urology Department, DHQ/MTI-TH, Dera Ismail Khan, Pakistan, from January 2021 to December 2021. The patients from the urology outdoor and emergency of DHQ Teaching Hospital were endorsed into the study. An online calculator (https://www.openepi.com/SampleSize/SSCohort.htm) was used to calculate the sample size. The sample size in this study was 128, with a 95% level of confidence and 80 % power of the test. Sampling was "consecutive nonprobability sampling." Inclusion criteria were male adult population with stricture length of less than 1.5 cm bulbar or bulbomembranous level strictures with no previous surgical intervention. Stricture length of more than 1.5 cm, strictures other than bulbomembranous or bulbar level, post-urethroplasty strictures, pan-urethral strictures, post-TURP strictures, neurogenic bladder, UTI, and previous history of corticosteroid use and patients who have had previous interventions for stricture disease were excluded from the study. Consent was taken from patients on a consent form. 128 patients were divided by lottery method into two groups, i.e., the experimental group and the control group, each containing 64 patients. Both groups underwent internal optical urethrotomy with a cold knife. In the experimental group, after IOU, patients were given Prednisolone 5mg, three tablets BD for 1st week, then two tablets BD for 2nd week and one tablet twice a day for 3rd week, and then one tablet once a day for one week with a total of 4-week therapy of oral steroids. The steroid therapy was started on an operative day as soon as the patient was orally allowed. In the Control Group, no oral steroids were given following internal optical urethrotomy. In both groups, antibiotics were given for 5 days and analgesics when needed. The Foleys catheter was removed on day 7. All patients in these study groups were advised not to practice intermittent self-catheterization to see the oral steroid effect exclusively. Patients were assessed in 6th month following the procedure. On follow-up, patients were assessed for recurrence by taking a detailed history of lower urinary tract symptoms, performing retrograde urethrogram, and ultrasound KUB for Post micturition residual urine. Recurrence was defined as having bothersome symptoms with significant narrowing on retrograde urethrogram or Post micturition residual urine of more than 100ml or needed for further surgical intervention. The patient's age matched the variables, whereas the recurrence rate of urethral stricture was our research variable. SD and Mean analyzed age (in years). Percentage and count were used to analyze nominal variables, i.e., recurrence rate. This study had a posttest-only control group design; therefore, the McNemar chi-square test (Zar, 1999) tested the hypothesis with Yates correction for continuity at alpha 0.5 using Graph Pad (Zar, 1999).

Results

152 patients were enrolled in the study to overcome the follow-up loss. 24 patients were lost in follow-up. The remaining 128 patients completed the study. The mean age in the experimental group was 36 ± 13 years, and 41 ± 09 in the control group with no significant difference in age. The recurrence was observed in 12 (18.75%) patients in the experimental group after 6 months, while in the control group, 25 (39.06%) patients showed recurrence of urethral stricture. Fifty-two patients in the experimental group and thirty-nine patients in the control group were stricture free at 6th month. These results showed a statistically significant difference in recurrence rate between these two groups with a p-value of 0.0123, so the null hypothesis was rejected.

Table 1: Recurrence rate of urethral stricture following internal optical urethrotomy in the Experimental and control groups

Recurrence Rate(N) in the Control group	**Recurrence Rate(N) in the experimental group**		**Columns Total**	**Chi-Square value**	**Degree of freedom**	**p-value**
Attributes	Yes	No				
Yes	7	18	25	6.261	1	0.0123
No	5	34	39			
Rows Total	12	52	64			

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Discussion

Results of the present study show that the use of oral steroids after performing an internal optical urethrotomy prevents the recurrence of urethral stricture significantly. Stricture is notorious for recurrence. It was once said, "Once a stricture, always a stricture" (Siregar et al., 2017). Different modalities to treat urethral stricture disease have been proposed; internal urethrotomy is the first-line treatment. Others include Urethral dilation, Holmium laser endourethrotomy (Dutkiewicz and Wroblewski, 2012; Jhanwar et al., 2016) and end-to-end anastomotic urethroplasty (Kumar et al., 2014) .In an attempt to maximize the efficacy of IOU, post-surgery CISC (van Leeuwen et al., 2011), intralesional injection of steroids (Govindaraju and Ettappan, 2018; Tabassi et al., 2011), and intralesional injection of Mitomycin-C are given (Ali et al., 2015). Many studies advocate using steroids after IOU to minimize inflammatory reactions and scar formation. Most of these studies were to evaluate the outcome of intralesional injection of steroids. (Govindaraju and Ettappan, 2018; Tabassi et al., 2011) and very few on the role of oral steroids (Gupta et al., 2018). In this study, we looked at oral steroids' role in preventing urethral stricture recurrence. We believe this will greatly impact the prevention of recurrence with better compliance with treatment.

Ali et al. (Ali et al., 2015) in the year 2015, conducted a study in the Department of Urology, Institute of Kidney Diseases Hayatabad Medical Complex, Peshawar, on the Efficacy of mitomycin C in reducing the recurrence of anterior urethral stricture after internal optical urethrotomy. They found that mitomycin-C is effective in preventing stricture recurrence compared to internal urethrotomy done alone. In our study, the success rate was impressive with oral steroids. One of the benefits of oral steroids is the convenience of taking them orally, and compliance is better, while mitomycin intralesional injection requires cystoscopic injection, which is not available easily in every center.

Govindaraju et al. (Govindaraju and Ettappan, 2018) 2018 conducted a study in which they compared the results of internal optical urethrotomy alone and combined with an intra-lesional injection of steroids. They found that the recurrence was 13.3 % in the experimental group compared to 36.6% in the control group (p value<0.05). Their study results are more or less comparable to your study with oral steroids, as we had a p-value of 0.01, showing a significant difference in recurrence between the treatment groups.

Kumar et al (Kumar et al., 2014) in 2012 conducted a study in which they assessed the efficacy of internal optical urethrotomy with intralesional injection of Triinject (triamcinolone, mitomycin-C, and hyaluronidase). The success rate increased from 80.6% to 94.2% after the Triinject injection for anterior urethral stricture of less than 1.5 cm. We used oral steroids and had a success rate of about 81 %, comparable with this study.

Sandeep Gupta (Gupta et al., 2018) and his co-workers 2018 documented in their study the efficacy of oral steroids after optical internal urethrotomy in reducing recurrence of urethral strictures " that oral steroids use, significantly reduces the recurrence rate after internal optical urethrotomy on 6th-month follow-up (p-value =0.02). Our study results (p-value =0.0123) are comparable to those of Sandeep Gupta. Our study period was the same as that of Gupta's study.

In 2011, Tabassi (Tabassi et al., 2011) and his co-workers conducted a study in which they injected intraurethral submucosal triamcinolone injection after internal optical urethrotomy and compared the results with internal optical urethrotomy alone and after steroid injection. Recurrence rates in the experimental group were lower than in the control group, but the difference was insignificant (P = 0.584). Our study used oral steroids instead of intralesional injection of steroids. The results showed a significant difference (p value=0.01) between the steroids group and the one without steroid use. Our study showed good results in terms of the rate of recurrence as compared to Tabassi.

After Internal optical urethrotomy, scar formation (Spongiofibrosis) occurs, narrowing the urethral lumen (Chhetri et al., 2009). Different modalities are used to prevent dense fibrosis and the recurrence of stricture. Antifibrotic agents such as mitomycin -C, hyaluronidase, docetaxel, bitoxin A, captopril, and steroids were used in different studies with promising results (Chhetri et al., 2009; Govindaraju and Ettappan, 2018; Khan et al., 2011). In this study, we used an oral steroid (Prednisolone 5mg) in the experimental group and got an impressive outcome regarding recurrence. Our study period was 6 months; therefore, long-term follow-up studies with large sample sizes may be needed for oral steroid efficacy in the long run.

Conclusion

The use of oral steroids after internal optical urethrotomy decreases the risk of recurrence of urethral stricture significantly.

Conflict of interest

The authors declared absence of conflict of interest.

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