

OUTCOME BETWEEN INTRALESIONAL INJECTION OF TRIAMCINOLONE FOLLOWING OPTICAL INTERNAL URETHROTOMY (OIU) AND OIU ALONE FOR THE MANAGEMENT OF SHORT SEGMENT STRICTURE OF MALE URETHRA

HOSSAIN MS¹, HAQUE ME², HASAN MZ³, SAHA PK⁴, RAHMAN M⁵, ALI MI⁶, MAOYA MM⁷, JAHURA FT⁸, ISLAM MK⁹, BEGUM R¹⁰

Abstract

Objective: To compare the outcome of optical internal urethrotomy (OIU) with or without intralesional triamcinolone acetate injection for the treatment of short segment anterior urethral stricture.

Methods: This prospective quasi experimental study was carried out in the department of Urology, DMCH, Dhaka from November 2015 to April 2017 on 50 patients with short segment of anterior urethral stricture. Cases were randomly allocated to group A (OIU without Triamcinolone) and group B (OIU with Triamcinolone). Each group consisted of 25 patients. Data were analyzed and compared by statistical tests.

Results: There were no significant differences in the baseline characteristics of the patients. Recurrences of stricture urethra were higher among those without Triamcinolone than cases with Triamcinolone which was statistically significant ($p=0.033$) at 6 month and ($p=0.016$) at 9 months. Regarding mean time interval in month of development of recurrence of stricture was 6.1 ± 1.66 months in Group A and 7.66 ± 1.52 months in Group B which was statistically significant ($p=0.001$)

Conclusion: OIU with intralesional triamcinolone is better than OIU alone. It significantly reduced and delayed the recurrence of anterior urethral stricture.

Key words: Urethral stricture, LUTS, OIU.

DOI: <https://doi.org/10.3329/jdmc.v29i2.51186>
J Dhaka Med Coll. 2020; 29(2) : 126-130

Introduction:

Urethral stricture is fibrotic narrowing of urethral lumen. This narrowing restricts urine flow¹. A patient with urethral stricture presents with obstructive & irritative voiding symptoms including frequency, urgency and occasionally dysuria². Stricture disease can have a profound impact on quality of life resulting in infection,

bladder calculi, fistulas, sepsis and ultimately renal failure. Studies of stricture disease in untreated patients show high rates of complications³. Many different treatment modalities are available such as dilatation, urethrotomy & urethroplasty. OIU is simple, safe & minimum inconvenience to the patient and requires a short time of work procedure⁴. In clinical practice OIU is an easy procedure and

1. Dr. Md. Sazzad Hossain, Registrar, Dept. of Urology, Evercare Hospital Dhaka, Bangladesh.
2. Mir Ehteshamul Haque, Senior Consultant, Dept. of Urology Evercare Hospital Dhaka, Bangladesh.
3. Dr. Mohammad Zahid Hasan, Senior Consultant, Dept. of Urology, Evercare Hospital Dhaka, Bangladesh.
4. Dr. Prodyut Kumar Saha, Associate professor, Department of Urology, Dhaka Medical College & Hospital, Bangladesh.
5. Dr. Mostafiqur Rahman, Assit. Prof. Dept. of Urology, Prime Medical College & Hospital, Rangpur, Bangladesh.
6. Dr. Md. Ibrahim Ali, Residencial Surgeon, Dept of Urology, Mymensingh Medical College & Hospital, Bangladesh.
7. Dr. Md. Mostakim Maoya, Registrar, Dept. of urology, Evercare Hospital Dhaka, Bangladesh
8. Dr. Fatema-tuz-Jahura, Assit.Prof. Dept. of Pharmacology, Prime Medical College & Hospital, Rangpur, Bangladesh
9. Dr. Md. Kamrul Islam Medical Officer, Sadar Hospital, Habigong. Bangladesh.
10. Dr. Rehana Begum, Medical Officer, Dept. of Obs & Gynae, Sadar Hospital, Laxmipur, Bangladesh.

Correspondence: Md. Sazzad Hossain, ¹Registrar, Dept. of Urology, Evercare Hospital Dhaka, Bangladesh. Email: sazzadshahin78@gmail.com

Received: 01-05-2020

Revision: 25-05-2020

Accepted: 21-10-2020

is offered as a first-time treatment, but the long-term results are inferior to urethroplasty⁵. If wound contraction significantly narrows the lumen before the completion of epithelialization, the stricture recurs. Several techniques have been used to oppose the process of wound contraction and to prevent stricture recurrence such as indwelling foley catheter, clean intermittent self-catheterization. Injection of steroids at the site of urethrotomy prevents scar formation by inhibiting collagen synthesis, increase endogenous collagenase production and reduces levels of collagenase inhibitors⁶. The aim of study was to compare the outcome of OIU with or without intralesional triamcinolone acetonide injection for the treatment of short segment anterior urethral stricture.

Methods:

This prospective study was carried out among the patients with urethral stricture planned for OIU in the department of Urology, Dhaka Medical College Hospital, Dhaka, from November 2015 to April 2017. The selection criteria were age 18 - 65 years, male, length of stricture up to 1.5 cm, maximum flow rate on uroflowmetry <15 ml/sec. Patients having multiple stricture, neurogenic bladder, BXO with anterior urethra stricture, previous intervention for urethral stricture, per operative complications- bleeding, extravasations of urine were excluded. Total 50 patients were selected by statistical formula & randomly allocated to 2 groups. Group A consisted of 25 patients who underwent OIU without inj. Triamcinolone. Group B- 25 patients who underwent OIU with inj. Triamcinolone. Odd-numbered cases were allocated for Group A & even-numbered cases

were allocated for Group B. Written informed consent was taken from every case. Each study subject was evaluated by history, physical examination and investigation. All patients were investigated by Urine profile & culture sensitivity, Serum creatinine, Ultrasonogram of KUB with MCC & PVR. Uroflowmetry, RGU & MCU-determination of site & length of stricture. Standard operative procedure was followed in every case. OIU was done at 12 o'clock position by using cold knife. Only fibrotic tissue was cut, and normal healthy urethra was remaining intact. The incision was continued until a 21 Fr optical sheath would pass through the stricture site into the bladder and thorough cystoscopy was done. After OIU triamcinolone inj. was given, On the other hand, OIU was done for the control Group. After the procedure bladder catheterized with 18 fr Foley for 5 days. After the procedure patients were followed up regularly at 3, 6 & 9 months of postoperative period. The treatment would report successful if they wouldn't complain any voiding symptoms & had a peak flow rate >15 ml/sec. The need for secondary procedure like dilatation, internal urethrotomy, and urethroplasty will be considered as treatment failure.

Results:

Total 50 patients of urethral stricture were allocated to group A (OIU) & group B (OIU with triamcinolone inj.). Among them mean age was 35.6 & 37.04 years for group A & group B respectively (Table I).

Q max in both groups-A & groups-B. Q max during pre-operative and post-operative period was statistically not significant in between the groups but Pre-post-operative Q max in same group was statistically significant (Table II).

Table I
Mean age of study subjects, (n=25).

Age	Grup A (OIU without Triamcinolone)	Group B (OIU with Triamcinolone)	p value
Mean ± SD	35.6 ± 13.05	37.04 ± 13.04	0.698

Table II
Comparison of Q max between two groups (ml/sec) [n=25].

Groups	Pre-operative Q max (mean ± SD)	Post-operative Q max (Mean ± SD)	p value
Group A	12.23 ± 2.5	19.58 ± 2.10	0.001
Group B	13.12 ± 2.14	20.98 ± 2.54	0.001
p value	0.18	0.23	

Both Group-A & Group-B voiding time during pre-operative and Post-operative period was not statistically significant and pre-post-operative voiding time was statistically significant (Table III).

Comparison of post-operative bleeding, extravasations of urine and infection between two groups: Values in the parentheses denote corresponding percentage (%). Shows the comparison of post-operative bleeding, extravasations of urine and infection between

Group-A and Group-B which was not statistically significant (Table IV).

Post-operative recurrence of stricture was significantly higher among those without triamcinolone than subjects with triamcinolone (Table V).

Post-operative time interval (months) of development of recurrence of stricture were significantly more in group B than group A (Table VI).

Table III

Comparison of voiding time between two groups in second. (n=25).

Groups	Pre-operative voiding time		Post-operative voiding time		p value
	(Mean ± SD)		(Mean ± SD)		
Group A	85.50 ± 2.65		29.40 ± 2.40		0.001
Group B	86.35 ± 3.5		30.38 ± 3.25		0.001
p value	0.30		0.23		

Table IV

Comparison of post-operative bleeding, extravasations of urine & infection (n=25)

Complications	Group A		Group B		p value
	(OIU without Triamcinolone)		(OIU with Triamcinolone)		
	Present (%)	Absent (%)	Present (%)	Absent (%)	
Bleeding	1(4)	24(96)	2(8)	23(92)	1.00
Extravasations of urine	1(4)	24(96)	0(0)	25(100)	1.00
Infection	1(4)	24(96)	1(4)	24(96)	1.00

Table V

Comparison of rate of recurrence with follow up time (n=25).

Groups	3 month		6 month		9 month		p value
	Present (%) Absent (%)		Present (%) Absent (%)		Present (%) Absent (%)		
	Group A	1 (4)	24 (96)	8 (32)	17 (68)	10 (40)	
Group B	1 (4)	24 (96)	2 (8)	23 (92)	3 (12)	22 (88)	
p value	0.297 ^b		0.033 ^b		0.016 ^b		

Table VI

Comparison of mean time interval (month) of development of recurrence of stricture (n=25).

Time interval (month)	Group A		Group B		p value
	(OIU without Triamcinolone)		(OIU with Triamcinolone)		
Mean ± SD	6.1 ± 1.66		7.66 ± 1.52		0.001

Discussion:

Urethral strictures are difficult to manage for urologists due to its nature of recurrence. OIU is standard treatment of urethral strictures with varying success rates although not as good as open urethroplasty⁴. With the rise of endoscopic equipment, the first report of direct vision was seen in 1885 and has been gold standard of cold knife urethrotomy since 1971⁷. In this study, age ranges of the patients were between 18 to 65 years. The mean age was 35.6±13.05 and 37.04±13.04 years in group-A and Group-B respectively (p=0.698). In the study done by Kumar⁸, observed that median age at presentation of urethral stricture was 47 years (17- 80). Mean Q max was 12.23±2.5 ml/sec in Group-A and 13.12±2.14 ml /sec in Group-B (p=0.18). Q max after 3 months of operation was 21.15±1.52 ml/sec in Group A & 21.25±1.56 ml/sec in Group B (p=0.81). Q max after 6 months of operation was 19.10±1.10 ml/sec in Group A and 21.14±1.11 ml/sec in Group B and after 9 months 18.50±1.15 ml/sec in Group A and 20.55±1.20 ml/sec in Group B. There was statistically significant between these two groups (p<0.05). The current study result Q max was similar with the previous study done by Palminteri⁹. Q max improved from a mean of 8.4ml / sec (range 4 to 11 ml/sec) preoperatively to 28.8 ml/sec. (range 16 to 11 ml/sec) after 6 months postoperative period¹⁰. Preoperative voiding time was 85.50±2.65 sec in Group A and 86.35±3.15 sec in Group B (p=0.30). Voiding time after 6 months of operation was 29.40±2.40 sec in Group A & 30.38±3.25 sec in Group B (p=0.23). There was significant statistical difference between preoperative and post operation in both groups. Voiding time decrease from mean 90.52 sec (preoperative) to mean 30.25sec after 6 months of postoperative period in the study of Jiang¹¹. Regarding complications after operation bleeding, extravasations of urine and Infection was seen 1(4%), 1(4%), and 1(4%) in Groups-A and 2(8%), 0(0%) & 1(4%) in Group-B respectively which was not statistically significant (p<0.05)⁵. In the study done by ⁸kumar, in experimental group 2 (4.50%), 3 (7.56%) and 2 (4.52%) patient developed bleeding, extravasations of urine and infection respectively. In this study post-

operative recurrences of stricture were higher among those without Triamcinolone than subjects with Triamcinolone which was statistically significant (p=0.033) at 6 month and (p=0.016) at 9 months. In the previous study done by ⁸Kumar overall recurrence after OIU with Triamcinolone was 19.4%. Mazdak⁶ reported study on 25 patients treated OIU with triamcinolone inj. recurrence was seen in 21.7% and among 21 patients treated by OIU, recurrence was 50%. ¹²Korhonen and colleagues reported on 21 patients underwent only OIU, 71% patient develop recurrence while 17 patients received triamcinolone injection after OIU, 61% develop recurrence.¹³Hardec observed in case series that patients treated by OIU without steroid injection, the rate of recurrent of stricture was 19.4%. Using inj. of triamcinolone, the recurrence rate was reduced to 4.3%. The similarity of these studies suggests that triamcinolone inj. during OIU may decrease the recurrence rate significantly. Regarding mean time interval in month of development of recurrence of stricture was 6.1±1.66 months in Group A and 7.66±1.52 months in Group B which was statistically significant (p=0.001). Study done by ¹⁴Venkatachalam, 19 of 33 patients were treated OIU with triamcinolone and 14/33 had only OIU, mean time to recurrence in experimental group was 9.6 months compared to 7.09 months in control group which was statistically significant. The similarity of the results in these studies suggests that triamcinolone inj. during OIU decrease the recurrence rate and delays the recurrence of stricture urethra significantly. In this study, recurrence rates of anterior urethral stricture were statistically significant between two groups. OIU with intralesional triamcinolone inj. is better than OIU alone.

Conclusions:

Optical internal urethrotomy with intralesional triamcinolone injection is better than optical internal urethrotomy alone. It significantly reduces the recurrence of stricture and delayed the recurrence of anterior urethral stricture at least for short term.

REFERENCES:

1. Andrich, DE. & Mundy, AR., 2000. 'Urethral stricture and their surgical management', *BJU Int*, vol.86(4), pp. 571-580.
2. Wright EJ, Webster. 1998. Dorsal onlay urethroplasty for repair of bulbar urethra strictures. *J. Urol.*, 159 (vol 2), p. 67.
3. Lindsay A. Hampson, Jack W. McAninch, Benjamin N. Breyer, 2014, Male urethral strictures and their management. *Nature Reviews Urology* volume 11, pp.43-50.
4. Tabassi, KT., Yarmohamadi, A. and Mohammadi, S., 2011. 'Triamcinolone Injection Following Internal Urethrotomy for Treatment of urethral Stricture', *Urology Journal*, vol. 8(2), pp. 132-136.
5. Jain, SK., Kaza, RC., Singh, BK., 2014, Evaluation of holmium laser versus cold knife in optical internal urethrotomy for the management of short segment urethral stricture. *Urol Ann*, vol. 6, pp. 328-33.
6. Mazdak, H., Izadpanahi, MH., Ghalamkari, A., Kabiri, M., Khorrami, MH. And Mahdavi, KM., 2009. 'Internal urethrotomy and intraurethral submucosal injection of triamcinolone in short bulbar urethral strictures', *International Urology and Nephrology*, vol. 42(5), pp.565-569.
7. Shirazi, M., Khezri, A., Samani, SM. , Monabbati, A., Kojoori, J. and Hassanpour, A., 2007, 'Effect of intraurethral captopril gel on the recurrence of urethral stricture after direct vision internal urethrotomy: phase 2 clinical trial, *Int J Urol*, vol. 14(4), pp. 203
8. Kumar, S., Garg, N., Singh, K. and Manda, AK., 2014. 'Efficacy of Optical Internal Urethrotomy and Intralesional Injection of Vatsala-Santosh PGI Tri-Inject (Triamcinolone, Mitomycin C, and Hyaluronidase) in the Treatment of Anterior Urethral Stricture, *Ad Uro*, vol. 5(2), pp. 234-238.
9. Palminteri, E, Manzoni, G, Berdondini, E, Di Fiore, F, Tasta, G, Poluzzi, M, Molon, A., 2008, 'Combined dorsal plus ventral double buccal mucosa graft in bulbar urethral reconstruction', *European urology*, vol. 53, pp. 81-90.
10. Datta, B, Rao, MP, Acharya, RL, Goel, N, Saxena, V, Trivedi, S, Dwivedi, US, Singh, PB 2007 Dorsal onlay buccal mucosal graft urethroplasty in long anterior urethral stricture' *Int.Braz J urol*, vol. 33(2), pp.181-187.
11. Jiang, J, Zhu, Y, Jiang, L, Luo, D, Wei, X, Wazir, R, Li, H, Wang, K 2015, Combined Dorsal plus Ventral Double-Graft Urethroplasty in Anterior Urethral Reconstructions, *Indian Journal of Surgery*, Vol.77, pp,396-405.
12. Korhonen, P., Talja, M., Rutu, M. and Alfthan, O., 1989, Intralesional Corticosteroid Injection in combination with internal urethrotomy in the treatment of Urethral Stricture, *international urology and nephrology*, vol. 22(3), pp.263-269.
13. Hradec, E., Jarolin, L. and Petrik, R., 1981. Optical internal urethrotomy for stricture of male urethra; Effect of local steroid injection, *Eur Urol*, vol. 7(3), pp. 165-168.
14. Venkatachalam T.P., Ponnusamy P., Karuppaiah B.P., Darlington C.D, 2015. Effects of Intralesional Triamcinolone injection following Internal Urethrotomy in treatment of Stricture urethra- A prospective analytical experimental study, *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, Volume 14, Issue 11 Ver. II, pp. 27-34