ORIGINAL RESEARCH PAPER
Volume - 12 | Issue - 11 | November - 2023 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

ROLE OF INTERMITTENT SELF-DILATATION FOLLOWING DIRECT VISUAL INTERNAL URETHROTOMY IN REDUCING RECURRENCE OF URETHRAL STRICTURES - A PROSPECTIVE STUDY.

Urology

Yugal D. Jain — Final year Mch Urology, Department of Urology, Vijayanagar Institute of Medical Science, Bellary, Karnataka.

N Imdad Ali — Professor and Head of the Urology Department, Department of Urology, Vijayanagar Institute of Medical Science, Bellary, Karnataka.

Jayaprakasha G — Associate Professor, Department of Urology, Vijayanagar Institute of Medical Science, Bellary, Karnataka.

ABSTRACT

Objectives- Anterior urethral stricture is a common urological problem that forms major part of urology opd. There are many management options like Direct Vision Internal urethrotomy (DVIU) but despite showing immediate good results, the risk of recurrence is higher. To prevent this the concept of clean intermittent self-dilatation (ISD) was introduced. This randomized clinical trial study was undertaken to compare the chances of recurrence in DVIU patients with or without ISD. **Methods-** A randomized controlled prospective study was conducted in department of urology in Vijayanagar institute medical sciences, Bellary from January 2021 to December 2021. Total of 86 cases of age ranging 20-80 years with stricture less than 2 cm who underwent DVIU were included. All cases were randomized in two groups, Group 1 - DVIU with intermittent self – dilatation (ISD) and Group 2 - DVIU without ISD. **Results-** Among 86 cases 12 patients lost their follow up, so 74 patients were included in this study. 74 patients were divided randomly into 2 groups. 37 patients were included in group 1 (DVIU + ISD) and 37 patients were included in group 2 (DVIU without ISD). Majority of patients were in the age group of 20-40 years. The Mean age of total cases (n=74) was 38 years. Urethritis (post infection stricture) being common cause for stricture urethra in both the Group 1 and Group 2. Recurrence of stricture was seen in 19.5% out of 37 in treatment group 1 and in 77.3% patients out of 37 in control group 2. **Conclusion-** The study concluded that ISD is a simple and effective way of reducing chances of recurrences after DIVU and has good acceptability and compliance.

KEYWORDS

Internal urethrotomy, intermittent self-dilatation, urethral stricture

INTRODUCTION

Urethral stricture is a common urological problem and one of the oldest disease known to mankind. Basically, urethral stricture as a term per se generally refers to anterior urethral disease, or a scarring process involving the spongy erectile tissue of the corpus spongiosum (spongiofibrosis). Contraction of this scar reduces the urethral lumen and hence cause structuring.[1]

There are several managements of anterior urethral stricture dilatation, direct vision internal urethrotomy (DVIU), Urethroplasty. For small urethral strictures, urethral dilatation is considered as a first line of management. *The Sushruta Samahita* written by the great Indian sage-surgeon of premedievial times outlined the procedure in detail. It mentioned that 'an open ended tube (made of either iron, wood or shellac) lubricated with clarified butter should be introduced gently into the urethra. Every 3rd day thicker and thicker tubes should be introduced. In this manner the urethral passage is made to dilate.' Since then there has not been any major changes in the practice of dilatation.[2] DVIU, popularized by Sachse in 1974 has greatly improved the treatment of urethral strictures.[3] This procedure is now the primary method of treatment for new and recurrent urethral strictures less than 1.5 cm in length particularly located in the bulbar or penile urethra.[4]

Even though there are good immediate results, risk of recurrence between 10 and 50% should be considered.[5,6] Most recurrences occur within the first year. To prevent this high rate of recurrence the concept of clean intermittent self-dilatation (ISD) was introduced by Lapides in the early 1970s who proposed that strict aseptic techniques are not necessary for this procedure.[7] Performing ISD regularly causes splinting of the raw, cut edges of urethral stricture and preventing them from sticking back together and contracting again after DVIU.

In our study we have investigated the effect of ISD on the frequency of recurrence of urethral stricture in a randomized, controlled manner including complications.

MATERIAL AND METHODS

This study was conducted at Department of Urology, Vijayanagara Institute of Medical Sciences, Bellary, Karnataka from January 2021 to December 2021.

Total 86 cases were considered in this study and those 86 were randomly allocated in two groups. Group 1 underwent ISD after DVIU whereas in group 2 only DVIU was done.

Patients between 20-80 years of age with stricture of length <2 cm localized to bulbar/penile urethra who underwent DVIU and had indwelling catheter for 14 days were included in this study. Criterias for exclusion were females, patients with hypospadias, epispadias or neurogenic bladder, patients with previous history of DVIU, cancer of the prostate, tumours of the bladder requiring check cystoscopies, those who were unable to learn or perform ISD for any reason and malignant urethral stricture. Well informed consent was taken from all the patients.

In addition to history, clinical examination and routine laboratory investigations, radiological evaluation including retrograde urethrogram and Micturating cystogram were performed to evaluate the location and length of the Urethral Stricture. Uroflometry was performed in all patients before the start of treatment to record the maximum flow rate. According to urine culture sensitivity, urinary tract infections (UTI) were treated in all patients before performing DVIU.

Under spinal anesthesia, patient was put in lithotomy position. Preoperative antiobiotic dose was given. After instilling adequate xylocaine jelly through per urethra, cystourethroscopy is done with 22fr sheath. Guidewire is negotiated under vision through stricturous opening and over guidewire internal urethrotomy is done at 12'o clock using 21fr sheath and cold knife over area of stricture. Cystoscope is further negotiated beyond it and into bladder following over the guidewire and is followed by diagnostic cystoscopy. Bladder is drained with 18 fr foleys. Patients were discharged next day with 18fr foleys in situ and follow up on weekly and monthly basis. After 2 weeks, 18 foley's catheter was removed and patients were trained to perform ISD with Nelaton catheter no. 14. Patients were advised for ISD daily for 7 days, alternate day for another 14 days, then weekly for 1 month and then monthly for 1 year. Patients were advised to wash Nelaton catheter, hands and genitalia before and after each ISD with antiseptic soap or lotion.

Data was collected by structure questionnaire for each patient at outpatient follow-up at 1st, 3rd, 6th month and 12th months. Patients or their relatives either had written or verbal consent before being enrolled in this study. For postoperative 1st six months patients were followed up on monthly basis and advised to consult early in case of any complication like haematuria, pyuria, epididymo-orchitis or fever and in case of failure to perform ISD. Patients were followed up for next six months for recurrence of lower urinary tract symptoms.

Study Design
All data collected was entered in SPSS. Age, length of stricture and recurrence of stricture were research variables. Age grouping was demographic whereas Length of stricture was categorized <1 cm and >1 cm. Recurrence of stricture and length of stricture were analyzed and expressed as frequency and percentage. Age was expressed as mean and standard deviation by using IBM SPSS version 21. Chi-square test of independence was used to compare the proportion of stricture recurrence between the two groups. Alpha value of ≤ 0.05 was considered as statistically significant

Method Of Randomization:
Randomization of patients to 2 intervention groups was performed using Computer generated random sequence allocation.

RESULTS
Among 86 cases considered 12 patients lost their follow up, so 74 patients were included in this study. 74 patients were divided randomly into 2 groups. 37 patients were included in group 1 (DVIU + ISD) and 37 patients were included in group 2 (DVIU).

In this study Urethritis was the common cause for stricture urethra in both the Group 1 and Group 2. The other causes of stricture urethra are instrumentation, surgery for hypospadias, post TURP and idiopathic.

The distribution of age groups is presented in Table 1 with majority of patients were in the age group of 20-40 years (49% in Group 1 and 82% in Group 2). The Mean age of total cases (n=74) was 38 years.

Table No.1: Age Distribution Of Patients

Age group (years)	Group 1(%)	Group 2 (%)	Total (%)
20-40	18 (49)	30 (82)	48 (64)
41-60	13 (35)	5 (13)	17 (24)
61-80	6 (16)	2 (5)	9 (12)
Total	37 (100)	37 (100)	74 (100)
Mean ± SD	43.25 ± 12.5	28.72 ± 8.7	38.67 ± 12.3

Majority of patients (n=28 or 76.74%) had <1 cm length whereas 9 (23.25%) patients had stricture length >1cm in both the groups. Length of stricture <1cm were seen in 29 (78.6%) patients and >1 cm were seen in 8 (21.4%) patients in group 1, whereas length of stricture <1 cm was seen in 25 (68.5%) patients and >1 cm were seen in 12 (31.5%) patients in group 2.

Recurrence of stricture was seen in 19.5% out of 37 in treatment group 1 (DVIU with ISD) and in 77.3% patients out of 37 in control group 2 (DVIU without ISD) (Table 2). In Group A and B Stricture was most common in first Six months which suggests that recurrence is most common in early post-operative period.

Table No.2: Stricture Recurrence Comparison In The Treatment Groups

Stricture recurrence	Yes	No
Group 1	7 (19.4%)	30 (80.6%)
Group 2	29 (77.3%)	8 (22.7%)

Most common complication in post-operative period was UTI followed by bleeding and recurrence of stricture. On Urine culture *E. coli* was most common and antibiotics were given according to culture. Bleeding was most commonly due to inappropriate use of Nelatons catheter and subsequent trauma.

DISCUSSION
ISD has an important role in managing recurrent urethral strictures. Urethral stricture is a potentially difficult disease to cure as there is a high recurrence rate especially with endoscopic optical urethrotomy as a primary treatment.[8,9] Reported recurrence rate is around 50%.[10] Various methods have been suggested to reduce this recurrence, commonest being intermittent self-dilatation and clean intermittent self-catheterization. We conducted first prospective randomized control study trial in our institute to compare the outcome of DVIU with or without ISD in urethral stricture and its role for prevention of recurrence of urethral stricture.

In our study the age range was (20-80) years with mean age of 38.67 ± 12.3. The mean age of patients in group 1 was 43.25 ± 12.5 while in group 2 it was 28.72 ± 8.7. Majority of patients in group 1 (49%) and group 2 (82%) is between 20-40 years of age group. Our results are comparable with study by Balndi et al and Menghini et al.[11,112]

In our study total 28 (76.74%) patients had stricture length <1cm whereas 9 (23.25%) patients had stricture length >1cm. Study by Menghini et al. and Khan M & et al. have observed that greater the length of stricture, higher the chance of stricture and such cases needs repeated DVIU followed by ISD.[12,13]

Recurrence of urethral stricture was seen in total 36 patients; 19.5% patient in Group 1 (DVIU+ ISD) and 77.5% patients in Group2. Gnanaraj et al assessed 78 patients who were on self-calibration comparing them to group of 49 patients on dilatation. The first group had a significantly lower re-stricture rate of 5%[14]. Lauritzen et al reported frequency of recurrence after internal urethrotomy of 9% in the patients randomized to CISC.[15] Study done by Kumar et al. showed similar result to our study in treatment group but higher percentage of recurrence in control group.[16] Kjaeergard et al randomized 43 patients to either weekly ISD for 1 year or no ISD. The stricture recurrence was 68% in those who did not perform ISD versus 19% in those who did clearly demonstrating the beneficial effect of ISD.[17] Patients on self-calibration had narrower strictures and a significantly lower stricture rate.[14] The method offers the possibility of long-term cure and reduces the number of patients who require urethroplasty.[18] Besides safety and easy administration, ISD is cost effective. ISD by nelaton catheter is reliable and safe procedure, having good compliance and very less morbidity.[19]

CONCLUSION
Stricture urethra is a common urological disease and notorious for reoccurrence. ISD is relatively safe, cost effective, acceptable and easy to perform procedure with good compliance and very little complications and high success rate in prevention of urethral stricture following DVIU and help in maintaining the normal urethral caliber.

REFERENCES

1. Shaw TJ, Kishi K, Mori R. Wound associated skin fibrosis: mechanism and treatment based on modulating the inflammatory response. Endocr Metab Immune Disord Durg Targets. 2010;10(4):320-30.
2. Das S. Urology in ancient India. Ind J Urol. 2007;23:2-5.
3. Sachse H. Zur Behandlung der Harnröhrenstriktur: die transurethrale Schlitzung unter Sicht mit scharfem Schnitt. Fortschr Med. 1974 Jan 10;92(1):12-5.
4. Andrich DE, Mundy AR. Urethral strictures and their surgical treatment. BJU Int 2000:86;571.
5. Gaches CGC. Ashken MH, Dunn M, Hammonds JC, Jenkins IL, Smith PJB. The role of selective internal urethrotomy in the management of urethral stricture: a multi-centre evaluation. Br J Urol 1979;51:579–83.
6. Hjortrup A, Walter S. Kristensen JK, Bilde T. Stricture of the urethra treated by internal urethrotomy by Sachse's method. Ugeskr Laeger 1983:145:734–6.
7. Lapides J, Diokno AC, Silber SJ, Lowe BS. Clean, intermittent self-catheterisation in the treatment of urinary tract disease. J Urol 1972;107:458–61.
8. Roosen JU. Self-catheterisation after urethrotomy: Prevention of urethral stricture recurrence using clean intermittent selfcatheterisation. Urol Int'l. 1993;50:90-2.
9. Tamella TL, Permi J, Ruutu M, Talja M. Clean intermittent self-catheterization after urethrotomy for recurrent urethral strictures. Ann Chir Gynaecol Suppl 1993;206:80-3.
10. Steenkamp JW, Heyns CF, de Kock MS. Internal Urethrotomy versus dilation as treatment for male urethral strictures: a prospective, randomized comparison. J Urol 1997;157: 98.
11. Balindi SS. Optical Internal Urethrotomy in The Treatment of Urethral Stricture Disease. Duhok Med J [Internet]. 2007
12. (Meneghini A, Cacciola A, Cavarretta L, Abatangelo G, Ferrarrese P, Tasca A. Bulbar Urethral Stricture Repair with Buccal Mucosa Graft Urethroplasty. Eur Urol 2001; 39(3): 264–7.
13. Khan S, Khan RA, Ullah A, ul Haq F, ur Rahman A, Durrani SN, et al. Role Of Clean Intermittent Self Catheterisation (CISC) in The Prevention Of Recurrent Urethral Strictures After Internal Optical Urethrotomy. J Ayub Med Coll Abbottabad JAMC 2011;23(2): 22-5
14. Gnanaraj J, Devasia A, Gnanaraj L, Pandey AP. Intermittent self catheterization versus regular outpatient dilatation in urethral stricture: a comparison. Aust N Z J Surg 1999;69:41-3.
15. Lauritzen M, Greis G, Sandberg A, Wedren H, Ojdeby G, Henningsohn L. Intermittent self-dilatation after internal urethrotomy for primary urethral strictures: A case-control study. Scand J Urol Nephrol 2009;43:220-5.
16. R VK, Dharwadkar S, Doshi C, Batta A. Role Of Intermittent Self Catheterization in Prevention of Recurrence of Stricture Urethra Following Visual Internal Urethrotomy: A Prospective Single Centre Study. Int Surg J 2019; 6(4): 1093–6.
17. Kjaergaard B, Walter S, Bartholin J, Andersen JT, Nohr S, Beck H, et al. Prevention of urethral stricture recurrence using clean intermittent selfcatheterization. Br J Urol 1994;73:692-5.
18. Robertson GS, Everitt N, Lamprecht JR, Brett M, Flynn JT. Treatment of recurrent urethral strictures using clean intermittent self-catheterisation. Br J Urol 1991;68:89-92.
19. Mazdak H, Meshki I, Ghassami F. Effect of mitomycin C on anterior urethral stricture reocurrence after iinternal urethrotomy. Eur Urol. 2007;51:1089-92.