

Assessment of quality of life in patients of urethral stricture on clean intermittent catheterization following direct vision internal urethrotomy

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Abstract

Context: Clean intermittent catheterization (CIC) after direct vision internal urethrotomy (DVIU)

Aims: The aim is to assess the quality of life (QOL) in patients with urethral strictures on CIC following DVIU.

Settings and Design: Prospective study.

Materials and Methods: This prospective study was conducted between August 2013 and July 2015 in the Department of Urology at KGMU, Lucknow. We included patients above the age of 18 years with stricture urethra, who were on CIC following direct visual internal urethrotomy. Patients below the age of 18 years, noncompliance, concomitant neurogenic voiding dysfunction, multiple strictures, pan anterior strictures, and posterior stenosis were excluded from the study. A 16 French Foley catheter was used for CIC following DVIU. Patients were evaluated at follow-up visit at 3, 6, and 12 months. At each follow-up visits, patients were assessed using CIC-QOL questionnaire, maximum urine flow rate and complications related to CIC if any.

Statistical Analysis Used: Unpaired *t*-test was used to compare continuous data, and Fisher's exact test was used to analyze categorical data.

Results: Among total 144 male patients evaluated, we included 97 patients, who underwent DVIU. Mean age of the study population was 37.7 ± 14.03 years. Most urethral strictures were idiopathic (64.02%) followed by postinflammatory (24.25%). A significant number of patients reported difficulty in performing CIC, which hampered daily activities. No major procedure related complications were reported. Patients who were compliant to CIC reported no stricture recurrence till 6 months follow-up.


Conclusions: CIC following DVIU remains a reasonable adjunctive option. All the parameters of CIC-QOL questionnaire had improved on continuing CIC. Young men on CIC had greater impairment of QOL when compared to aged patients.

Keywords: Clean intermittent catheterization, direct vision internal urethrotomy, quality of life, urethral strictures

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INTRODUCTION

Urethral stricture is a common urological ailment and one of the oldest diseases known to humankind. Three most commonly performed procedures for the management of urethral strictures are urethral dilatation, optical urethrotomies, and urethroplasty. The treatment for urethral strictures has greatly changed after the introduction of minimally invasive procedures like direct vision internal urethrotomy (DVIU), described by Sachse.^[1] DVIU is now the preferred procedure for short segment urethral stricture. Despite good immediate results of DVIU, it has been associated with high recurrence rate between 10% and 50%.^[2-5] To improve the success rate of DVIU, various adjunctive procedures have been adopted, most preferred is clean intermittent catheterization (CIC).

Objective

To assess the quality of life (QOL) in patients with urethral strictures on CIC following DVIU.

MATERIALS AND METHODS

This prospective study was conducted between August 2013 and July 2015 in the Department of Urology at a tertiary care referral center, India. Ethical approval obtained from the Institutional Ethical Committee. Written informed consent was obtained from all patients. We included patients above the age of 18 years with stricture urethra, who were on CIC following DVIU. Patients below the age of 18 years, noncompliance, concomitant neurogenic voiding dysfunction, multiple strictures, pan anterior strictures, posterior stenosis were excluded from the study. Baseline demographic of patients were recorded [Table 1]. The patient underwent either conventional cold knife DVIU or holmium laser DVIU under local or regional anesthesia. A 16 F (French) Foley catheter was used for CIC following DVIU. We instructed the patients about CIC schedule. Patients were taught about CIC by proper education and demonstration of the technique. Patients were instructed to continue CIC once or twice a week. Patients were evaluated at follow-up visit at 3, 6, and 12 months. At each follow-up visits, patients were interviewed by CIC-QOL questionnaire (CIC-QOL), maximum urine flow rate (Q_{max}, ml/s) [Table 2] and complications related to CIC if any.

To the best of our knowledge, no validated questionnaire is available to assess QOL in patients on CIC. We designed a visual analog scale (1–10 scale) which was based on questionnaire previously used to assess the impact of CIC in a neurogenic population. Modifications were made to

Table 1: Baseline patient characteristic of the study population (n=97)

Parameters	n (%)
Mean age±SD (years)	37.7±14.03
18-30	28 (27.16)
31-50	45 (43.65)
51 and above	24 (23.28)
Mean duration of symptoms (months)	27.8 (2-120)
History of previous intervention	6 (5.82)
Comorbidities	
Diabetes mellitus	5 (4.85)
Hypertension	12 (11.64)
CAD	2 (1.94)
COPD	2 (1.94)
Etiology	
Idiopathic	66 (64.02)
Postinflammatory	25 (24.25)
Posturethroplasty	6 (5.82)
Procedure	
Conventional DVIU	77 (74.69)
Laser DVIU	18 (17.46)
EEA urethroplasty	2 (1.94)
Site of stricture	
Bulbar urethral stricture	67 (64.9)
Peno bulbar	24 (23.28)
Anastomotic site (posturethroplasty)	6 (5.82)
Mean frequency of CIC according to age overall (/day)	1.06±0.66
18-30 years	0.96±0.66
31-50 years	0.98±0.62
>51 years	1.28±0.65
Complications of CIC	
None	89 (86.33)
Bleeding per urethra	4 (3.88)
Fever/UTI	4 (3.88)

SD: Standard deviation, CAD: Coronary artery disease, COPD: Chronic obstructive pulmonary disease, DVIU: Direct vision internal urethrotomy, EEA: End-to-end anastomotic, CIC: Clean intermittent catheterization, UTI: Urinary tract infection

Table 2: Follow up variables and quality of life questionnaire score

Variables	At 3 months	At 6 months	P
CIC-QOL questionnaire parameters			
Difficulty in performing CIC	5.06±1.36	3.84±1.15	0.0001
Interference with daily activities	3.11±1.63	1.38±0.52	0.0001
Painful perception	3.76±1.39	2.56±1.05	0.0001
QOL score	5.16±1.36	3.56±0.97	0.0001
18-30 years	6.2±1.4	5.4±1.2	0.02
31-50 years	5.12±1.35	3.58±1.02	0.001
>50 years	4.7±1.3	3.01±0.9	0.0001
Variables	At presentation	At 3 months	At 6 months
Q _{max} (mL/s)	6.79±2.1	18.04±2.16	18.97±2.2
Variables	At 3 months	At 6 months	
Recurrence of stricture (%)			
Adhere to CIC (n=97)	0	9 (19.8)	
Discontinued CIC (n=47)	0	19 (40.4)	

CIC: Clean intermittent catheterization, QOL: Quality of life

make this questionnaire suitable for urethral stricture. The responses of 1–3 were considered good, 4–6 as moderate and 7 or greater were interpreted as poor. Item assessed were frequency, difficulty, interference with daily activities

and pain associated with the CIC. Impact on QOL was assessed using the level of patient interest in continuing CIC for the duration of life [Figure 1].

RESULTS

A total of 144 male patients were enrolled during the study. A total of 47 patients were excluded from the study due to inadequate follow-up or discontinuation of CIC. Included 97 patients underwent DVIU either by cold knife or holmium laser. Mean age of the study population was 37.7 ± 14.03 years. Mean CIC frequency was 1.06 ± 0.66. Most urethral strictures were idiopathic (64.02%) followed by postinflammatory (24.25%), involving the bulbar urethra in majority patients (64.9%). Six patients underwent DVIU for anastomotic site stricture [Table 1].

QOL assessment of patients doing CIC demonstrated a significant impact. A significant number of patients reported difficulty in performing CIC, which hampered daily activities. Many patients described as a nightmare with significant painful experience [Table 2].

No major procedure related complications were reported. Only four patients had bleeding per urethra due to traumatic CIC, among them three patients developed fever [Table 1]. Patients who were compliant to CIC reported no stricture recurrence till 6 months follow-up [Table 2].

DISCUSSION

Urethral stricture is a common urological disorder, and it is one of the age-old urologic disease known to ancient time. The management of urethral stricture disease has

changed over the centuries. It was believed that the results of urethroplasty were better than minimally invasive interventions. However, in the current era new minimally invasive intervention claimed results nearly approachable to conventional urethroplasties for short segment bulbar urethral strictures.

Most commonly performed the minimally invasive procedure for short segment bulbar urethral stricture is DVIU. It was popularized after the initial report of Sachse's in 1972. In 1980s, the concept of CIC following DVIU took shape to decrease the stricture recurrence rate.^[6]

Since the first description of CIC for the prevention of recurrence after urethrotomy, several reports have advocated it as an acceptable procedure to reduce the failure rate of the DVIU. Many individualized regimens described and tapered within 3–6 months.^[7-10]

Later, other beneficial aspects of CIC have been evaluated, including early recognizing of recurrence, maintenance of the patency and has accepted as an adjunctive option tool for the management of urethral stricture following DVIU.^[11] Extrapolating the results of CIC on the QOL in patients with urethral stricture was inevitable.

Some studies had assessed the QOL of neurogenic patients, who were on CIC and reported improved QOL associated with CIC.^[12]

To the author's knowledge, there is a paucity of literature regarding the impact of CIC on QOL in patients of urethral stricture treated with DVIU.

PATIENT CLEAN INTERMITTENT CATHETERIZATION- QUALITY OF LIFE QUESTIONNAIRE

Name: _____

Date: _____

1. How long have you been doing CIC? _____

2. During the past four weeks, how many times per day did you catheterize? _____

3. During the past four weeks, how difficult was it to perform CIC? (Please mark an "X" on the corresponding to your response).

Very easy |-----| Extremely difficult

4. During the past four weeks, how did the need to catheterize interfere with your work or other regular daily activities: (Please circle on the following responses)

a. Not at all
 b. A little bit
 c. Moderately
 d. Quite a bit
 e. Extreme

5. During the past 4 weeks, how painful was it to perform catheterization: (Please mark an "X" on the corresponding to your response)

No pain |-----| Extreme pain

6. If you were to spend the rest of your life with your current catheterization regimen, how would you feel about that? (Please mark an "X" on the corresponding to your response).

Satisfied |-----| Dreadful

Figure 1: Patient clean intermittent catheterization-quality of life questionnaire

The most common site of stricture in the present study was bulbar urethra in 67 patients (64.3%), followed by peno-bulbar region (23.28%) and 5.82% at postanastomotic site following urethroplasty and the most common cause was idiopathic in 64.02% and postinflammatory in 24% of cases which is in comparable to various studies in the literature.^[13,14]

The duration of catheterization in this study was 7 days in all cases. There is no convincing evidence that extending the duration of catheterization has a positive impact on the outcome.^[15] Albers *et al.* reported that leaving the catheter in place for more than 7 days had a higher recurrence rate (65%).^[16]

Girotti *et al.*^[17] followed sixty patients up to 1 year and reported women, neurogenic voiding dysfunction and patient under 40 years old were significantly more adherent to CIC program. Malik *et al.*^[18] reported that 89% of patients in their study were compliant to the procedure of CIC following DVIU, anastomotic and substitutional urethroplasties. Similarly, Rijal *et al.*^[19] reported that the procedure of CIC was well tolerated by 84.1% of patients and 79.6% had no technical difficulty. In our study, 67.3% of patients were adhering to CIC program up to 6 months of follow-up which was less than the adherence rate reported by Malik *et al.* and Rijal *et al.* Possible explanations may be our strict inclusion criteria, low literacy status and younger age group patients who were not interested in continuing CIC further and opted for reconstructive surgery.

WHOQOL^[20] and Igawa *et al.*^[21] mentioned possible complications of CIC include bleeding, pain, fever which made or forced the patient to nonadherence.

In the present study, none of the patients suffered any major complication related to CIC. Eighty-nine (86.33%) patients did not suffer any major complication, 4 (3.88%) patients reported mild bleeding per urethra and 4 (3.88%) patients developed a fever (>100 F) which was managed conservatively. Thus, CIC is a safe procedure, if executed with proper instructions.

In this study, mean frequency of CIC per day was 1.06 ± 0.66 which is similar to study by Lubahn *et al.*^[22] As there is no standard protocol and many patients may not follow the advised protocol for CIC. Hence, we calculate the mean number of catheterization per day. In this study, mean number of catheterization was nearly similar in all the age groups, which shows that it does not have a major adverse impact on QOL of patients included in the study. In this study, no patients had a recurrence of stricture who

were on CIC following DVIU up to 6 months of follow-up. Among 47 patients, who was excluded, 9 (19.8%) had a recurrence at 3 and 19 (40%) patients had a recurrence at 6 months of follow-up. This is in accordance with various studies in the literature which suggest that CIC decreases the rate of recurrence.^[7]

In the present study, the Qmax (ml/s) was significantly increased from the baseline value both at 3 and 6 months, and no statistically significant difference was observed between 3 and 6 months. Improvement in urinary flow might be a probable reason for the continuation of CIC for 6 months. Shaw *et al.*^[23] found that the positive impacts of CIC were related to improvement in lower urinary tract symptoms, whereas the negative impacts resulted from the practical difficulties encountered, and the psychological and cultural context of worry and stigma.

Rijal *et al.* reported that CIC was well tolerated by 84.1% of patients and 79.6% had no technical difficulty. Lubahn *et al.* also reported similar results in their study, in which younger age group patient who were on CIC had poor QOL.

Patients of all ages (above 18 years) in this study found CIC a simple procedure and performed it without much difficulty and pain. With time, patients learned and adapted to the procedure well, as there was a statistically significant difference observed in this study between 3 and 6 months of follow-up. This observation suggested that patients of age above 18 years can perform CIC without much difficulty and pain. In this study, patients report difficulty and pain in performing CIC as moderate. Overall QOL reported by patients was moderate (3.56 ± 0.97) on CIC-QOL questionnaire.

This study strongly suggests that younger men, who performed CIC following DVIU had greater QOL impairment when compared to older age group patients. The reason for the underlying dissatisfaction in young men was not captured by the survey and may be related to poor psychosocial acceptance of the regimen or sexual concerns. Although the questionnaire was not validated for this usage, we believed that it was satisfactory initial attempt to assess patient perceptions in this poorly studied treatment modality. Our impression was that QOL was greatly enhanced after urethroplasty, but patients had not administered the same QOL questionnaire postoperatively for comparison.

CONCLUSIONS

CIC following DVIU remains a reasonable adjunctive option for patients with stricture urethra who cannot

undergo or do not elect major urethral reconstructive surgery. All the parameters of CIC-QOL questionnaire had improved on continuing CIC. Young men on CIC had greater impairment of QOL when compared to aged patients.

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Conflicts of interest

There are no conflicts of interest.

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