

Patient acceptance of clean intermittent self-catheterization: Comparing urethral route and Mitrofanoff stoma

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Abstract

The prospective, cross-sectional study was conducted at the Department of Urology, Sindh Institute of Urology and Transplantation, Karachi, from February to July 2022 to compare outcomes related to Clean Intermittent Self-Catheterisation via the urethral route and Mitrofanoff stoma. A total of 114 patients were divided into two urethral Clean Intermittent Self-Catheterisation Group A and Mitrofanoff Clean Intermittent Self-Catheterisation Group B. Quality of life, frequency, pain and difficulty associated with Clean Intermittent Self-Catheterisation were assessed using validated 12-item Medical Outcomes Study Short Form questionnaire. Data was analysed using SPSS 27. Group A had a mean age of 35.82 ± 14.68 years, while Group B had a mean age of 29.03 ± 14.42 years. Group B had a higher daily catheterisation frequency (5.85 ± 2.03) than Group A (4.12 ± 1.31) ($p=0.001$). No significant differences were observed in catheter size, difficulty, discomfort or quality of life outcomes between the groups. The study demonstrated that both Clean Intermittent Self-Catheterisation methods were feasible and well-accepted by the patients.

Keywords: Clean intermittent self-catheterisation, Mitrofanoff stoma, Visual analogue score.

DOI: <https://doi.org/10.47391/JPMA.30287>

Introduction

The lower urinary tract is based on highly coordinated neural mechanisms that regulate the detrusor muscle and urethral sphincter to enable voluntary, socially appropriate voiding.¹ When these neural pathways are compromised — as seen in spinal cord injury, multiple sclerosis or spina bifida — patients often develop neurogenic lower urinary tract dysfunction (NLUTD), resulting in urine retention, incontinence or incomplete bladder emptying.¹ Clean Intermittent Self-Catheterisation (CISC), often called

intermittent catheterisation, is universally endorsed in recent clinical guidelines as the preferred bladder management strategy for NLUTD among individuals with intact hand function.² This technique supports renal protection, reduces upper tract damage, diminishes incontinence, and empowers independence.²

Recent evidence emphasises the advantages of hydrophilic-coated catheters over non-hydrophilic types. A systematic review found reduced rates of urethral microtrauma, strictures, and symptomatic urinary tract infections (UTIs) with hydrophilic-coated catheters, along with higher patient satisfaction.³ Despite these benefits, urethral CISC may still cause complications, such as catheter-related discomfort, urethral trauma, and catheter blockage, especially in individuals with mobility limitations or poor manual dexterity.³ To address these challenges, continent catheterisable channels, like the Mitrofanoff stoma, have been developed as alternative access routes.⁴ Studies indicate high rates of ease of catheterisation, excellent self-perceived cosmetic outcomes, and strong quality of life (QIL) scores among users of Mitrofanoff diversion.⁴

Despite these insights, direct comparative data between urethral CISC and Mitrofanoff channels remains limited. Importantly, long-term, patient-centred metrics — such as perceived comfort, ease and health-related QOL — are underrepresented.⁴ Additionally, evolving factors, like caregiver support, public restroom accessibility and social stigma, significantly influence adherence over time.⁵

The current study was planned to directly compare urethral versus Mitrofanoff catheterisation, evaluating procedural difficulty, pain, catheterisation frequency, and health-related QOL through validated tools. By prioritising real world patient experiences and feedback, the study sought to inform evidence-based, personalised bladder management strategies with due consideration of physical, psychological and social factors.

Methods, Results and Discussion

The prospective, cross-sectional study was conducted at the Department of Urology, Sindh Institute of Urology and Transplantation (SIUT) Karachi, over six months from

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Submission completed: 07-02-2025 **1st Revision received:** 22-08-2025
Acceptance: 11-02-2026 **Last Revision received:** 10-02-2026

February to July 2022. A total of 114 patients practicing CISC were included into urethral route Group A and Mitrofanoff channel Group B. Inclusion criteria comprised patients performing CISC for over six months. Exclusion criteria comprised patients with indwelling Foley catheters, those unable to self-catheterise, and those practicing CISC for <6 months.

Sample size estimation was based on literature⁶ with 90% power and 5% significance. A non-probability consecutive sampling technique was used. The Mitrofanoff channel was constructed using either the appendix (appendico-vesicostomy) or ileum (Monti channel). Patients presenting for follow-up at the outpatient department (OPD) who met the inclusion criteria were enrolled. Each participant completed a questionnaire based on the 12-item Medical Outcomes Study Short Form (SF-12) to assess health-related QOL.⁷ Visual analogue scale (VAS) was used to rate difficulty and pain, with 0=none and 10=extreme. Data was analysed using SPSS 27. Quantitative variables were described using mean±standard deviation, while qualitative data was expressed as frequencies and percentages. Independent t-tests and chi-square/Fisher's

Table-1: Demographic and clinical characteristics of the participants (n=114).

	Study Group n (%)		p-value
	Group A	Group B	
Gender			
Male	27 (47.4)	37 (64.9)	0.059
Female	30 (52.6)	20 (35.1)	
Mean Age (years)	35.82±14.68	29.03±14.42	0.014*
Age Group			
≤18 years	5 (8.8)	13 (22.8)	0.052
19-35 years	25 (43.9)	27 (47.4)	
>35 years	27 (47.4)	17 (29.8)	
Diagnosis			
Atonic B	10 (17.5)	6 (10.5)	0.405
Bladder outlet obstruction	3 (5.3)	2 (3.5)	
GUTB	1 (1.8)	0 (0)	
Lower urinary track dysfunction	16 (28.1)	14 (24.6)	
Neurogenic bladder	21 (36.8)	23 (40.4)	
Small Capacity	3 (5.3)	2 (3.5)	
Stricture	2 (3.5)	1 (1.8)	
TB bladder	1 (1.8)	5 (8.8)	
Exstrophy epispadias	0 (0)	3 (5.3)	
PFUDD	0 (0)	1 (1.8)	
Mean CISC Frequency per day	4.12±1.31	5.85±2.03	<0.001*
Groups			
≤3	17(29.8)	4 (7)	0.002*
>3	40 (70.2)	53 (93)	
Mean Size of catheter used (FR)	11.78±1.91	11.93±1.64	0.676
Groups			
≤10 FR	16 (28.1)	11 (19.3)	0.271
>10 FR	41 (71.9)	46 (80.7)	

CISC: Clean intermittent self-catheterisation; Independent t test was applied; Chi-square/fisher exact test was applied; *Significant at 0.05 level.

exact tests were used as appropriate. P<0.05 was considered significant.

Out of 114 patients, each group consisted of 57(50%) individuals. Group A included 27(47.4%) males with overall mean age 35.82±14.68 years, while Group B had 37(64.9%) males with overall mean age 29.03±14.42 years. Most patients in Group A were aged >35 years 27(47.4%), while the majority in Group B were aged 19-35 years 27 (47.4%).

The mean frequency of CISC was significantly higher in Group B (5.85±2.03/day) compared to Group A (4.12±1.31/day; $p<0.001$). Catheter sizes were similar between the groups ($p=0.676$) (Table 1).

No significant differences were observed in pain (Group A: 3.15±2.58; Group B: 2.89±2.40; $p=0.575$) or difficulty performing CISC ($p=0.586$). Interference with daily activity was also comparable ($p=0.564$). Majority of patients in both the groups reported improved QOL, but intergroup difference was not significant ($p=0.673$) (Table 2).

The current study compared CISC outcomes via urethral and Mitrofanoff routes, focusing on pain, difficulty and QOL. Although both the groups reported similar VAS pain scores, patients using the Mitrofanoff route showed slightly better trends in ease and satisfaction. The finding was

Table-2: Intergroup comparison of pain, difficulty in CISC and quality of life, and their association with CISC mode.

	Study Group n (%)		p-value
	Group A	Group B	
Difficulty while doing CISC			
Not at all	25 (43.9)	28 (49.1)	0.586
A little bit	18 (31.6)	14 (24.6)	
Quite a bit	1 (1.8)	4 (7)	
Moderate	9 (15.8)	9 (15.8)	
Extreme	4 (7)	2 (3.5)	
Mean Pain by VAS during CISC	3.15±2.58	2.89±2.40	0.575
Groups			
No/mild pain (0-3)	35 (61.4)	41 (71.9)	0.285
Moderate pain (4-6)	16 (28.1)	9 (15.8)	
Severe pain (7-10)	6 (10.5)	7 (12.3)	
Difficulty on CISC during regular activities			
Not at all	29 (50.9)	25 (43.9)	0.564
A little bit	15 (26.3)	18 (31.6)	
Quite a bit	5 (8.8)	2 (3.5)	
Moderate	7 (12.3)	9 (15.8)	
Extreme	1 (1.8)	3 (5.3)	
Overall changes of quality of life			
Extreme improvement	8 (14)	12 (21.1)	0.673
Improvement	32 (56.1)	31 (54.4)	
No change	10 (17.5)	9 (15.8)	
Deterioration	5 (8.8)	5 (8.8)	
Extreme deterioration	2 (3.5)	0 (0)	

CISC: Clean intermittent self-catheterisation; Independent t test was applied; Chi-square/fisher exact test was applied; *Significant at 0.05 level.

consistent with earlier studies.^{4,8} Mitrofanoff CISC offers advantages, such as reduced mobility requirement and improved cosmetic acceptance, especially in patients with neurological deficits or among children.^{4,9} However, in the current cohort, while subjective improvement in QOL was greater in Group B, the difference was not statistically significant.

The strengths of the current study include standardised assessment using SF-12 and the inclusion of both genders across diverse age groups. However, limitations include a small sample size, non-randomised division, and reliance on self-reported outcomes. Long-term complications, psychological effects, and impact on caregiver burden were not evaluated and warrant further investigation.

Despite the limitations, the current findings highlight that both the techniques were safe and tolerable, and contributed to improved QOL, with Mitrofanoff offering some additional social and psychological benefits in some patients.

Conclusion

Both urethral and Mitrofanoff routes for CISC were found to be feasible and well-accepted, with comparable outcomes. Further large-scale, long-term studies are needed to assess their sustained benefits and patient satisfaction.

Disclaimer: None.

Conflict of Interest: None.

Source of Funding: The Sindh Institute of Urology and Transplantation, (SIUT), Karachi.

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Author Contribution:

FMSAA & MM: Concept and design.

NAM, TURG & ML: Critical analysis and final approval.

AAAS: Data analysis and collection.