COMPARISON OF STANDARD AND HYDROPHILIC COATED INTERMITTENT CATHETERS IN BLADDER MANAGEMENT: A PROSPECTIVE STUDY WITH NON-NEUROGENIC UNDERACTIVE BLADDER PATIENTS

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HYPOTHESIS/ AIMS OF STUDY

Underactive bladder has been described as a complex of symptoms related to detrusor weakness. Post-void residual urine is a frequent problem encountered in patients with this condition and one that needs to be resolved to prevent upper urinary tract damage and avoid bladder overdistension. Clean intermittent catheterization (CIC) is a safe method for draining the bladder, but professional assistance is required to provide instructions regarding catheterization and thereby to achieve and maintain adherence to treatment. An early withdrawal rate of around 20% is, however, still being reported (1). The major challenge with this treatment is that of maintaining regular catheterizations and avoiding non-adherence. Preferential use of hydrophilic catheters is still controversial (2) and studies involving non-neurogenic patients have been scarce.

The aim of the present study was to compare the complication, satisfaction, and performance rates of standard and hydrophilic coated catheters in non-neurogenic patients undergoing long-term intermittent bladder catheterization.

STUDY DESIGN, MATERIALS AND METHODS

A before-and-after non-randomized controlled trial was conducted. Non-neurogenic underactive bladder patients aged 18 years or older were considered eligible for inclusion. The Underactive Bladder Questionnaire (UAB-q) was applied, and patients were invited to participate in the study if they scored ≥ 5 on this questionnaire, presented with post-void residual urine volume > 150ml, and were able to perform the CIC without previous experience. Patients who had previously undergone surgical procedures involving the lower urinary tract were excluded, along with those presenting with any neurological condition or cognitive/mental impairment. Patients were approached for recruitment directly by the researcher at an outpatient clinic. All patients first underwent training in intermittent self-catheterization with the same trainer. In the first phase, all patients used a 10 French standard polyvinyl chloride (PVC) catheter and Xylocaine® jelly lubricant for 45 days. These patients were evaluated after 15 and 45 days (Visits 1 and 2 - Phase 1). After this period, the patients received gender-specific Speedicath® 10 Fr hydrophilic catheters and were evaluated after 15 and 45 days of use (Visits 3 and 4 - Phase 2). A visual analog scale was used to assess levels of pain (Visits 1 to 4) and a bladder catheter user perception assessment scale to evaluate patient perception of the catheter (Visits 2 and 4).

No prior estimation of sample size was conducted, as no epidemiological studies of non-neurogenic underactive bladder patients needing CIC have yet been described. The study was approved by the Institutional Ethics Committee (CAEE: 96211318.4.0000.5192) and all participants signed informed consent.

Sociodemographic and baseline clinical data were presented in terms of mean and standard deviation or median and range. The Wilcoxon test was used to compare the scores between the standard catheter and hydrophilic-coated catheter groups. *P*-values < 0.05 were considered statistically significant.

RESULTS

A total of 29 subjects with underactive bladder (UAB-q >5), 15 women and 14 men, were enrolled in the study. The mean age was 53 ± 13 and the mean body mass index 28.3 ± 4.5. Sociodemographic and clinical data are shown in Table 1.

The incidence of complications is presented in Table 2. A difference was observed between the standard and hydrophilic-coated catheter groups in relation to the presence of symptomatic urinary tract infection in men, urethral bleeding, and pain. The incidence of asymptomatic bacteriuria was similar for both types of catheter.

RESULTS

TABLE 1: Clinical and demographic characteristics of patients.

Characteristics		Values
Mean age ± (SD)		53 ± 13
Gender n (%)	Women	16 (%)
	Men	14 (%)
Mean BMI ± (SD)		28 ± 4,5
Ethnicity n (%)	White	8 (27,59%)
	Mulatto	19 (65,52%)
	Black	2 (6,90%)
Education n (%)	Elementary school	25 (86,21%)
	High school	4 (13,79%)
Employment Status n (%)	Retired	11 (37,93%)
	Worker	18 (62,07%)
Marital Status	Single	15(51,72%)
	Married	14 (48,28%)
Smoking	Yes	4 (13,79%)
Drinking	Yes	7 (24,14%)
Hipertension	Yes	8 (27,59%)
Diabetes	Yes	8 (27,59%)
Heart disease	Yes	2 (6,90%)

TABLE 2: Outcomes using standard and hydrophilic coated catheters.

		Standard Catheter	Hydrophilic Catheter	p- value
UTI	Men	6 (100%)	0 (0%)	0.02
	Women	7 (77.8%)	2 (22.2%)	0.11
	Total	13 (86.7%)	2 (13.33%))	0.002
Asymptomatic Bacteriuria	Men	6 (50%)	6 (50%)	1.0
	Women	8 (53.3%)	7 (46.7%)	1.0
	Total	18 (58.1%)	13(40.74%)	0.29
Urethral Trauma	Men	5 (100%)	0 (0%)	0.04
	Women	11	0	<0.0001
	Total	14 (100%)	0 (0%)	<0.0001
		Median	Median	
Visual Analogue Scale Score (Both genders)		8	2	<0.0001
Assessment of perception score (Both genders)				
Packing opening		3	5	<0.0001
Catheter manipulation		3	5	<0.0001
Catheter sliding		2	5	<0.0001
Catheter removal		3	5	<0.0001
Safety in procedure		4	5	<0.0001

The score for overall perception of the hydrophilic coated catheter as reported by the participants was significantly higher for all items.

INTERPRETATION OF RESULTS

One previous study also found the use of a standard catheter to be more frequently associated with symptomatic urinary tract infection in neurogenic patients (3). However, the prevalence of asymptomatic bacteriuria did not differ significantly between the two types of catheters. Urethral bleeding was found only to occur with the use of the standard catheter. These results suggest that systematic use of a hydrophilic coated catheter may help to prevent urethral complications in long-term bladder management. A hydrophilic coated catheter has also been found to be associated with less discomfort and more favorable patient perception, both of which may be important in non-neurological patients with underactive bladder and preserved urethral sensitivity. Discomfort is considered to be a significant contributing factor in relation to non-adherence to this procedure.

The impossibility of blinding the participants and clinicians to the type of catheter used, the use of self-reported symptoms, and the limited sample size are all potential weaknesses of the present study.

CONCLUSIONS

Hydrophilic coated catheters may be considered more appropriate for non-neurogenic patients than standard catheters. However, further clinical and cost-effectiveness studies are needed before hydrophilic coated catheters can be established as the standard first choice for long-term bladder management in patients with preserved sensitivity.

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