

Time-Opening Suprapubic Catheter versus Intermittent Catheter for Male Patients with Spinal Cord Injury (Spinal Level above Level C5)

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Abstract

Objective: To compare the short-time complications associated with time-opening suprapubic catheter (SPT) versus intermittent catheter (IC) in male patients with spinal cord injury (above level C5).

Methods: A prospective review of records was carried out to identify SCI patients managed with SPT or IC between 2011 and 2016. The complications included renal function (Serum creatinine), urinary tract infection (UTI), bladder stones, urethral complications, scrotal, and gross hematuria. Patients were followed at week 4, 3 and 6 months; the urodynamic assessment was repeated at 6 months.

Results: A total of 30 patients (11 SPT, 19 IC) were recruited in this trial. No significant difference between the two catheter groups for the entire outcome. Scrotal abscesses and urethral stricture were only seen in patients with IC.

Conclusions: SPT have similar urological complication with IC for SCI patients (above level C5) except the incidence of scrotal abscesses and urethral stricture.

Keywords: Suprapubic catheter; Intermittent catheter; Spinal cord injury.

Introduction

Intermittent catheterization (IC) is the preferred management for neuro-urological patients who cannot effectively empty their bladders [1, 2]. The most common spinal level to be injured in China was cervical (31.4%–38.9%) [3]. For most of these patients, they can not perform

IC due to hand handicap. Suprapubic catheter (SPT) is considered a routine procedure. However, to our knowledge, it is not clear time-opening suprapubic catheter has the least morbidity for the SCI patient. Therefore, the objective of this study was to compare urological complications of time-opening suprapubic catheter for SCI.

Materials and Methods

This study was conducted in the department of urology of three hospitals from 2011 to June 2016. A total of 30 Chronic SCI inpatients (11 SPT, 19 IC) were included. The outcome for urological complications including renal function (Serum creatinine), symptomatic urinary tract infection (UTI), bladder stones, urethral complications, scrotal abscess, and gross hematuria. Patients were followed at 1,3,6,9 and 12 months. The study was approved by each hospital's Ethics Committee. Statistical analysis was completed using a Chi-square test and Fisher's exact test to compare specific complications between the two catheter groups. A P value of 0.05 or less was considered statistically significant.

Results

At baseline, there were no significant differences between the two groups with respect to demographic characteristics (Table 1). As listed in Table 2, 27.3% of patients in the SPT group and 31.57% of patients with an IC had at least one symptomatic UTI. Gross hematuria was noted in 54.5% of patients with SPT and in 73.7% of patients with an IC. For the SPT group, the incidence of recurrent bladder stones was 9.09%, as opposed to the IC group, for which it was 5.26%. In our study, scrotal abscesses and urethral stricture were only observed in patients with IC. No significant difference for average serum creatinine between SPT and IC groups at baseline and 12 months, respectively (Table 3).

Table 1: Baseline patients characteristics

Parameter	SPT group n = 11	IC group n = 19	P Value
Age*, yr	34.19 (12.74)	35.62 (11.75)	0.73
Weight*, kg	60.72 (26.31)	61.81 (25.04)	0.82
Time since SCI*, months	15.62 (4.86)	14.96(5.17)	0.77
AIS **, A/B	8/3	15/4	0.69

* Values are given as mean ± standard deviation; P values from Student's t-test between the two groups.
 **Values are given as n (%); P values from Chi-square test between the two groups.

Table 2: Serum creatinine at baseline and 12 months

Serum creatinine, umol/L	SPT(n=11)	IC(n=19)	P Value
Baseline	63.18 ± 28.34	64.67 ± 29.16	0.89
12 months	69.41 ± 22.08	64.33 ± 20.49	0.53

Table 3: Complications of time-opening SPT and IC

Complication	SPT(n=11)	IC(n=19)	P Value
Symptomatic UTI	3(27.3%)	6(31.57%)	0.81
Gross hematuria	6(54.5%)	14(73.7%)	0.28
Bladder stones	1(9.09%)	1(5.26%)	0.69
Scrotal abscess	0	4(31.57%)	0.11
Urethral stricture	0	2(10.52%)	0.27

UTI = Urinary Tract Infection

Discussion

In SCI patients CIC is considered to be the gold standard as the most appropriate and safest bladder management method in terms of urologic complications [2]. However, the rate of CIC reverting to urethral indwelling catheter was 21.4% and 9.77% SCI patients changed their bladder management from UC to an SPT [4, 5]. Moreover, SCI patients (above level C5) were unable to adapt IC due to hand handicap. Therefore, the aim of this retrospective review is to compare the urological complications in SCI patients managed with time-opening SPT and IC.

The primary aim in the urological treatment of SCI is to protect the function of upper urinary tract [2]. Although a more thorough analysis of serum creatinine measurements is required, the overall average serum creatinine of both time-opening SPT and IC groups suggests a preservation of renal function with either form of bladder management.

In this trial, although the follow-up period was relatively short, time-opening SPT were superior to IC with respect to complication. Specifically, no patients developed scrotal abscess and urethral stricture in SPT group. The

reasons we analyzed were that an SPT avoided contact with the structures adjacent to the urethra so as to be fewer adverse events in that area [6]. Of course, the limit of our study was that patient sample size was relatively small. Therefore, with a larger number of patients, it is reasonable to expect that this would become significant.

Furthermore, our study showed that there were no statistical differences between the two groups in terms of common complications including Symptomatic UTI rates, bladder stones and gross hematuria.

Conclusions

SPT have similar urological complication with IC for SCI patients (above level C5) except the incidence of scrotal abscesses and urethral stricture.

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