CASE REPORT

Using Stainless Steel Chopstick for Self-performing Urethral Sounding in Preventing Recurrence of Anterior Urethral Stricture

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Male urethral stricture is prone to recurrence, ranging from 40% to 80% according to the length of stricture no matter what treatment is introduced. Therefore, it has long been a common challenge for urologists to handle the problem. Sounding or self-dilation has proved to be effective in reducing the recurrence rate significantly. However, a standard equipment set of urethral bougie is too expensive for a patient's own use. On the other hand, the performance of regular outpatient sounding is time-consuming and costly. We present an easy way to perform urethral self-dilation using a stainless steel chopstick, which has proved to be cost effective and satisfactory for patients. From February 2001 to February 2003, 6 patients, with a mean age of 64.6 years (range 47–79), were introduced to this maneuver after a urethrotomy and were taught how to perform self-sounding with a stainless steel chopstick (18 Fr equivalent). The distance of advancement was determined individually by calibrating the location of the stricture. The long-term result of this maneuver was later checked with a telephone questionnaire about urination status in April 2005. The urethral strictures were located at penile in 3 patients, bulbar in 1, and navicular fossa with meatus in 2. The mean period for performing self-dilation was 15.3 weeks (range, 2–52). The mean follow-up period was 41.5 months (range, 26–55). No recurrence of stricture was found. [*J Chin Med Assoc* 2006;69(4):189–192]

Key Words: self-dilation, stainless steel chopstick, urethral stricture

Introduction

Male urethral stricture is a common, and sometimes challenging, problem for urologists. Urethroplasty remains the gold standard for treatment, and is usually easy to perform. However, the operation can be time-consuming and expertise-dependent in certain circumstances.[1] Internal urethrotomy was developed as an effective and simple way to treat urethral stricture.[2] However, it still has the drawback of a high recurrence rate, ranging from 40% to 80% according to the length of stricture.[3] Sounding or self-dilation has proved to be effective in reducing the recurrence rate significantly.[4–11] However, the commercial sets of self-dilation equipment are expensive and regular outpatient sounding is time-consuming and costly. We present an easy method using inexpensive equipment for a patient to perform self-dilation.

Case Reports

From February 2001 to February 2003, 6 patients, with a mean age of 64.6 years (range 47–79), were introduced to this postoperative maneuver. After treatment with internal urethrotomy or sounding alone, patients were advised to buy a pair of stainless steel chopsticks (about NT$20, shown in Figures 1 and 2), put them in boiling water for 30 minutes, and then wrap them in a clean towel. After calibrating the

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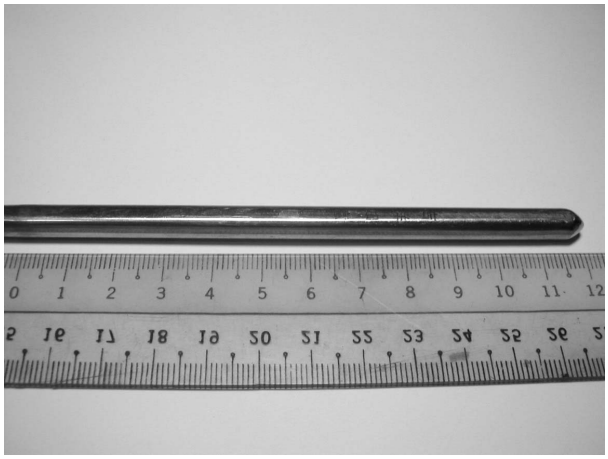

Figure 1. The stainless chopstick used for self-urethral sounding.

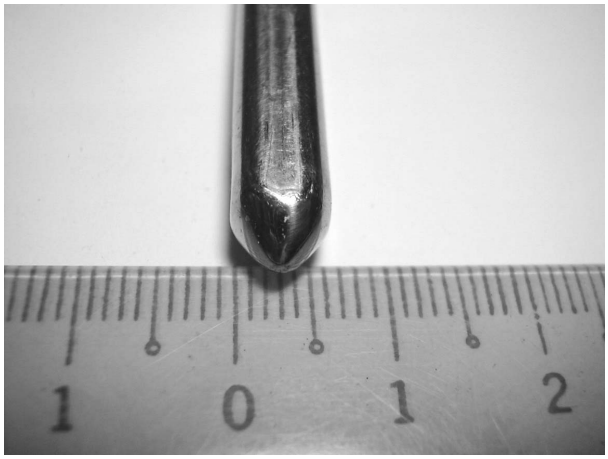

Figure 2. Close-up view of the wider end of the chopstick.

site and measuring the distance from the meatus to the stricture site and the length of the stricture by cystoscopy, bougie sounding of the urethra was performed. Then the patient was educated to self-dilate the urethra with the thicker end of the stainless steel chopstick (equivalent to the size of an 18-Fr urethral bougie). The procedure started with cleansing the external genitalia, both hands, and the chopsticks with soap. Then the chopsticks were disinfected with betadine. After lubricating with K-Y jelly, the chopstick was advanced slowly along the urethra with the penis held upward and stopped at a designated point that was assigned by the doctor matching the location of the stricture. The maneuver was performed 3 times a day at the beginning, and was gradually reduced to twice and then once per day according to the progress of healing and urethral epithelization. Outpatient follow-up was scheduled 1 week later. The first time, the patient was coached in how to perform the procedure and was also asked to demonstrate self-dilation under the guidance of the doctor. Any difficulty in technique or discomfort was responded to immediately by the doctor until both the doctor and the patient felt confident and agreed that the maneuver was perfected. Then the patient was followed up on an outpatient basis 1 month later. Meanwhile, intermittent telephone interviews were carried out by nurses. The long-term result of this maneuver was later checked with a telephone questionnaire about urination status in April 2005 and uroflowmetry in August 2005.

A summary of the data of 6 cases is presented in Table 1.

Case 1

Patient 1, 47 years old, had suffered from progressive lower urinary tract symptoms (LUTS) for several years. He received meatotomy and otis internal urethrotomy for a meatal stenosis (3 Fr) and proximal navicular urethral stricture (8 Fr) in February 2001. The Foley catheter was removed 3 days later, and the self-dilation protocol with the stainless steel chopstick was followed. He received follow-up for 2 months and reported good urinary flow ever since. Follow-up uroflowmetry showed the following: voided volume, 240 mL; maximum flow rate, 8.7 mL/sec; mean flow rate, 5.7 mL/sec (54-month follow-up).

Case 2

Patient 2, 55 years old, had suffered from painful and weak voiding for 3 weeks. He had received a diagnostic ureteroscopy and left ureteral double-J catheter indwelling in May 2002. Mild meatal stenosis (< 17 Fr) and penile-bulbar junction urethral stricture (< 17 Fr) were also noted and were treated with meatotomy and optic internal urethrotomy before the endoscopic procedure. The double-J catheter was removed smoothly 3 weeks later. However, penile urethral stricture was noted by cystoscopy 2 months later and sounded with a urethral bougie from 18 Fr to 24 Fr. Self-dilation with a stainless steel chopstick was advised to the patient after the sounding. The patient practiced the procedure for only 2 weeks. He was followed-up 1 month later and reported no more LUTS. The patient's flow on urination has thereafter been good and he required no further urologic follow-up. Follow-up uroflowmetry showed the following: voided volume, 561 mL; maximum flow rate, 17.6 mL/sec; mean flow rate, 11.7 mL/sec (37-month follow-up).

Case 3

Patient 3, 72 years old, had a history of benign prostatic hyperplasia (BPH) for years and had received transurethral resection of the prostate (TURP) twice.

He visited us for recurrent LUTS. Fibrocystoscopy showed the presence of a penile urethral stricture and residual adenoma of the prostate. He received a revised TURP in May 2001. A total of 5 g of prostate tissue was removed. Optic internal urethrotomy was done before the TURP. Self-dilation with a stainless steel chopstick was taught to the patient after removal of the Foley catheter. The patient practiced self-sounding for the following 2 weeks. The patient has maintained a good flow on urination. Follow-up uroflowmetry showed the following: voided volume, 269 mL; maximum flow rate, 14.6 mL/sec; mean flow rate, 9.8 mL/sec (51-month follow-up).

Case 4

Patient 4, 63 years old, had a history of diabetes mellitus and hypertension. He suffered from 1 episode of acute urinary retention and was followed up at the outpatient department. Uroflowmetry showed evidence of severe obstruction in which the voided volume was 468 mL, maximum flow rate was 2.4 mL/sec, and the mean flow rate was 1.2 mL/sec. Medication did not improve the symptoms. He received Otis and optic internal urethrotomy for meatal stenosis (12 Fr) and navicular urethral stricture (12 Fr) in February 2003. Self-dilation with a stainless steel chopstick was started after removal of the Foley catheter. The patient practiced the procedure for 1 year and discontinued when he achieved good urinary flow. He has been well ever since the self-dilation. Follow-up uroflowmetry showed the following: voided volume, 531 mL; maximum flow rate, 12.1 mL/sec; mean flow rate, 6.2 mL/sec (30-month follow-up).

Case 5

Patient 5, 79 years old, had BPH and received TURP in February 2003. Penile urethral stricture (20 Fr) was noted and treated with optic internal urethrotomy. The follow-up fibrocystoscopy 5 months later showed recurrence of penile urethral stricture. Sounding from 14 Fr to 24 Fr was performed and self-dilation with a stainless steel chopstick was introduced afterward. The patient practiced the procedure for 2 weeks only. The patient has not required further dilation. Follow-up uroflowmetry showed the following: voided volume, 181 mL; maximum flow rate, 8.3 mL/sec; mean flow rate, 5.6 mL/sec (25-month follow-up).

Case 6

Patient 6, 72 years old, had perineal scrotal abscess after incision and debridement; however, the wound developed into a urethrocutaneous fistula with a stricture at the penile urethra. He received scheduled optic urethrotomy for severe meatal stenosis and segmental penile urethral stricture. However, the operation failed because of a false tract that developed at the distal penile urethra, so an open suprapubic cystostomy was performed instead. Open perineal urethrotomy was performed and then the long tract of the strictured urethra was opened with antegrade and retrograde urethrotomy. After the operation, self-dilation with a stainless steel chopstick was started. The patient practiced the procedure for half a year and stopped when good urinary flow was achieved. The patient has not required any further dilation. Follow-up uroflowmetry showed the following: voided volume, 150 mL; maximum flow rate, 8.2 mL/sec; mean flow rate, 3.0 mL/sec (46-month follow-up).

The locations of the urethral stricture were penile in 3, bulbar in 1, and navicular fossa plus meatus in 2. Self-dilation was performed for a mean of 15.3 weeks (range, 2–52 weeks). The mean follow-up period was 40.5 months (range, 25–54 months). No recurrence of the stricture was found.

Table 1. Summary of urethral stricture site, dilation period, follow-up period, and follow-up uroflowmetry of the 6 cases

Case No.	Age, yr	Site	Dilation period, wk	Follow-up, mo	Follow-up uroflowmetry*
1	47	Meatus (3 Fr) and navicular fossa (8 Fr)	8	54	240/8.7/5.7
2	55	Penile-bulbar junction (< 17 Fr)	2	37	561/17.6/11.7
3	72	Penile	2	51	269/14.6/9.8
4	63	Meatus (12 Fr) and navicular fossa (12 Fr)	52	30	531/12.1/6.2
5	79	Penile (14 Fr)	2	25	181/8.3/5.6
6	72	Penile (near total obstruction)	26	46	150/8.2/3.0

**Uroflowmetry: total volume (mL)/peak flow rate (mL/sec)/mean flow rate (mL/sec)*

Discussion

Urethral stricture is one of the oldest known urologic problems and remains a common diagnosis for urologists. Open urethroplasty has been the gold standard for treatment, but it requires longer hospitalization, more surgical procedures, adequate operating room facilities, and, of course, more cost.[1] Endoscopic urethrotomy was, therefore, developed and provided a simpler method of treatment.[2] However, the main complication of the procedure is its high recurrence rate, ranging from 40% to 80% according to the length of stricture.[3] To reduce the recurrence rate, many adjustments have been proposed such as extending the time period of the Foley indwelling catheter, self- hydraulic urethral dilation,[12] clean intermittent self-catheterization,[4–10] and outpatient dilation.[11] Sounding or self-dilation proved effective in reducing the recurrence rate significantly.[3–11,13] However, the frequency and timing of urethral sounding was believed to be critical in preventing the recurrence. Most studies suggested a period of more than 1 year of dilation being needed before the stricture stabilized.[5] The total cost, including time and money, of regular outpatient sounding is tremendous and time- consuming.[14] Self-dilation is a good choice and studies have suggested it to be as effective as the physician practicing outpatient sounding.[13] However, the standard sets of self-dilation equipment are too expensive for patients.

To practice the chopstick self-sounding procedure, urologists need to select patients who are willing and capable of doing the procedure. We do not recommend this for those who have urethral strictures longer than 3 cm or proximal to the bulbar urethra. Patients who have difficulty with eyesight or movement coordination are not suggested for this procedure, either. Patients need a thorough coaching on the stepwise procedure under the monitoring of a urologist before they are qualified to perform it. Adequate follow-up is critical and the doctor needs to advise when and how to adjust the procedure.[11] In general, the procedure was well tolerated and accepted. The total satisfaction was good.

Based on the results of the reported cases, patients are satisfied with the outcome of their voiding condition, and reported no particular difficulty in the skill of self-sounding. Some patients had maximal flow rates of less than 10 mL/sec, but they reported improvement after the use of alpha blockers. Low flow rates might be related to the coexistence of prostate hyperplasia or a sign of outlet obstruction at the level of the bladder neck.

In conclusion, we present an easy method to perform self-dilation for patients after urethrotomy treatment. The stainless steel chopstick proved to be a convenient, inexpensive device for use as a urethral sound to prevent recurrence of urethral stricture.

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