



Urinary Catheterization for Urethral Stricture, Whom and How Long?

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ABSTRACT

Objective: Narrowing of the urethral lumen due to fibrosis, which occurs in the urethral mucosa and the surrounding tissue, is defined as urethral stricture. Even though the most common reason for urethral stricture is idiopathic, trauma and iatrogenic applications can also cause urethral stricture. In this study, we analyzed the association between recurrent stricture and urinary catheterization duration in patients who underwent direct vision internal urethrotomy for urethral stricture.

Methods: In our clinic, in 2014, we analyzed 157 patients who underwent direct vision internal urethrotomy with a cold knife for urethral stricture. All patients were divided into the following three groups as 3 days, 5 days, and 7 days after the operation in terms of urinary catheterization duration. To analyze the association between recurrent and postoperative Qmax values, Chi-square test and one-way analysis of variance (ANOVA) were performed.

Results: The mean age of 157 patients was 63.51 ± 13.86 years. The mean preoperative Qmax, stricture length, and postoperative Qmax values of all patients were 6.07 ± 2.70 mL/s, 2.61 ± 2.19 cm, and 10.9 ± 4.1 mL/s, respectively. Additionally, 49 (31.2%) patients had recurrent stricture and 108 (68.8%) patient had no recurrence. In total, 17 (36%) patients in the 3-day postoperative urinary catheterization group, 12 (22%) in the 5-day group, and 20 (35%) in the 7-day group had recurrent stricture. Statistical analyses revealed no statistical significance between groups in terms of recurrent stricture and postoperative Qmax values.

Conclusion: Currently, the recommended gold standard treatment for urethral stricture is direct vision internal urethrotomy. In the literature, many studies have compared surgical techniques and results. In our study, we found no statistical significance between urinary catheterization duration (3, 5, or 7 days postoperatively) in patients who underwent direct vision cold knife internal urethrotomy. The duration of postoperative urinary catheterization should not be extended; we recommend that remove it as soon as possible. After the operation, we believe that urinary catheterization must remove reasonable period of time, so patient comfort can be increased and urinary catheterization for recurrent strictures that develop due to remaining for a long time, could have been avoided. (*JAREM 2015; 5: 121-4*)

Keywords: Urethra, urethral stricture, urinary catheterization

INTRODUCTION

A urethral stricture occurs as a result of the scarring of the suburethral tissue in the corpus spongiosum that narrows the urethral lumen (1). It may impair a patient's quality of life by preventing urinary flow and may also cause serious complications such as kidney failure due to chronic urinary retention (2). Although the cause of urethral strictures is often idiopathic, stenosis can occur in the urethra due to traumatic and iatrogenic reasons (3).

Many surgical techniques are available for the initial treatment of urethral strictures. These options include the cold knife incision method that Sachse (4) described in 1974, internal urethrotomy with a laser and urethroplasty described with buccal mucosa or different graft techniques (5). Internal urethrotomy is a simple, effective, and repeatable surgical procedure that can be safely performed in short stenoses (6, 7).

Although many studies exist on the treatment, follow-up, and complications of urethral strictures in the literature, there is no consensus about the diameter and type of urinary catheter that should be preferred in patients in whom internal urethrotomy or urethroplasty was performed and about the duration that the urinary catheter should be left in patients postoperatively. In this

study, we examined the aforementioned criteria that we think contribute to the recurrence of urethral strictures in patients in whom internal urethrotomy was performed in our clinic.

METHODS

One hundred and fifty-seven patients in whom internal urethrotomy was performed with the cold knife procedure accompanied by endoscopic imaging due to urethral strictures were retrospectively analyzed in 2014 in our clinic. After the operation, the patients were divided into 3 groups, 3, 5, and 7 days, according to urinary catheterization time. Qmax values measured with preoperative uroflowmetry, stricture length, stricture levels, stricture numbers, urinary catheter diameter, postoperative urinary catheter time, 3rd month Qmax values in postoperative uroflowmetry, and recurrent stenosis were recorded. All operations were performed by specialist physicians. Patients who had anastomotic strictures after radical cystectomy and radical prostatectomy, those who previously underwent urethroplasty, and those who have bladder neck stenosis that developed after transurethral prostate resection were not included. The diameter and duration of the postoperative urinary catheter were left to the surgeon's preference.



Statistical Analysis

Statistical analyses were performed using the Statistical Package for Social Sciences for Windows (Chicago, IL, USA) 22.0. The descriptive statistics of all patients were entered. Recurrence and postoperative Qmax values among the groups were evaluated with the chi-square test and analysis of variance. $P < 0.05$ was considered statistically significant.

RESULTS

The mean age of 157 patients included in this study was 63.51 ± 13.86 . Of all the patients, the average preoperative Qmax value was 6.07 ± 2.70 mL/sec, stricture length was 2.61 ± 2.19 cm, and postoperative Qmax value was 10.9 ± 4.1 mL/sec (Table 1). While recurrence was observed in 49 (31.8%) patients, recurrent stenosis was not observed in 108 patients (68.8%). The follow-up period of the patients was 8.7 ± 4.1 months (range: 4-28 months). The urinary catheter was left postoperative for 3 days in 46 patients (29%), 5 days in 54 patients (34%), and 7 days in 57 patients (36%). Recurrent urethral stricture was observed in 17 of the patients (36%) in whom the urinary catheter was left postoperative for 3 days, 12 of the patients (22%) in whom it was left for 5 days, and 20 of the patients (35%) in whom it was left for 7 days (Table 2). The diameters of the urinary catheters used postoperatively in patients were, respectively, 16 Fr in 27 patients (17.2%), 18 Fr in 95 patients (60.5%), 20 Fr in 7 patients (4.5%), and 22 Fr in 28 patients (17.8%). The stricture was observed in the membranous urethra of 88 patients (56.1%), in the bulbar urethra of 48 patients (30.6%), and in both bulbar and membranous urethra of 21 patients (13.4%). While 110 patients (70.1%) were only operated upon once, the rest of the 47 patients (29.9%) underwent 2 and/or more internal urethrotomy endoscopic recurrent cold knife surgeries. Urethroplasty was not implemented in any patient. While a single stenosis was observed in 128 patients (80.1%), 2 and/or more stenoses were observed in 29 patients (19.9%). A statistically significant difference was not observed between the urinary catheter time and recurrence of stenosis ($p = 0.2$).

DISCUSSION

Urethral stricture may develop due to many reasons such as congenital and/or iatrogenic causes. Since Sacha (4) described endoscopic internal urethrotomy for the treatment of urethral stricture in 1974, although the emergence of recurrent stenosis at a rate of 33-60% after the operation is unfortunately not satisfactory, the recommended gold standard treatment for urethral strictures today is still the endoscopic internal urethrotomy method (8). Untreated urethral strictures can cause serious complications affecting the upper urinary tract (9). Most of the stenoses usually repeat in the first 12 months even in patients who have been operated upon for the second time (10).

The results of the internal urethrotomy surgical technique have been compared in many studies found in the literature. There are many studies related to internal urethrotomy performed with the cold knife incision technique and various types of lasers. It was emphasized in these studies that when laser incision was compared to cold knife incision in single urethral strictures,

there were advantages of less blood loss and length of hospital stay (11-14).

Andrich and Mundy (15) reported in their study that leaving the urinary catheter postoperatively for 3 days in patients who underwent internal urethrotomy due to urethral stricture would reduce the risk of early postoperative extravasation and infection.

Lipsky and Hubmer (16) reported that they kept the silicone urinary catheter for approximately 7 days in 32 patients undergoing internal urethrotomy and obtained successful results in 25 of them (83%). They stressed that more successful results were received in short stenoses with internal urethrotomy and that unsatisfactory results were received in cases with long stenoses, particularly in traumatic stenoses with large amounts of scar tissue.

Holm-Nielsen et al. (17) reported that no significant difference was found between patients retaining the urinary catheter for 3-7 days and those retaining the urinary catheter for 6 weeks after internal urethrotomy.

Albers et al. (18) reported that more recurrence was found for stenoses longer than 1 cm in patients who underwent internal urethrotomy and that urinary catheter retention should be for a minimum of 3 days.

Gücük et al. (19) reported that although there was no statistically significant difference in patients who retained the 18 Fr steroid-coated hydrophilic catheters for 2 weeks after internal urethrotomy, there was some increase in the operative maximum flow rate.

Table 1. Patient characteristics of the groups according to urinary catheterization time

Urinary Catheterization time	Age	Preoperative Qmax	Urethral stricture length
3 days	64.41	6.53	2.95
5 days	61.94	6.29	2.97
7 days	64.28	5.49	2.01
p value	0.4	0.2	$p < 0.01$

Table 2. The relationship among probe duration, recurrence, and Qmax

		The number of patients	Pre-operative Qmax	Post-operative Qmax	p value
3 days	Recurrent	17 (36%)	6.09	6.79	0.2
	Non-recurrent	29 (64%)	10.27	11.8	
5 days	Recurrent	12 (22%)	6.73	6.17	0.2
	Non-recurrent	42 (78%)	10.23	11.25	
7 days	Recurrent	20 (35%)	5.24	5.62	0.2
	Non-recurrent	37 (65%)	8.85	11.36	

In our study, among the groups in which we performed internal urethrotomy with the cold knife method due to urethral strictures, we did not detect a statistically significant difference in terms of postoperative urinary catheterization impact for 3, 5, and 7 days to recurrent urethral strictures and the postoperative Qmax values. No consensus was found regarding postoperative urinary catheterization time in the literature. In this study where we did not find a significant difference, we also recommend to not prolong the postoperative urinary catheterization time and to remove it as quickly as possible. We recommend that the probe duration be at least 3 days due to the poor comfort it provides to the patient as well as the increased risk of infection as previously mentioned in the literature because a long postoperative urinary catheter time may lead to the emergence of recurrent stenosis, thus causing ischemic damage in the urethral mucosa (19). We also suggest that the urinary catheter time can be kept longer relying on the surgeon's experience in stenoses longer than 1 cm and traumatic stenoses that require recurrent urethrotomies.

The restrictive aspect of our study is that the groups could not be divided into subgroups according to the lengths of stenoses due to the small number of patients. The degree of stenosis is different in each patient, and we believe that will be a significant relationship in terms of the degree of stenosis and recurring disease. However, the degrees of stenoses of the patients could not be evaluated in our study.

CONCLUSION

The gold standard treatment method of urethral strictures is endoscopic internal urethrotomy. The stenosis can be repeated due to many reasons after urethrotomy; therefore, patients may be exposed to recurrent surgical interventions. By retaining the probe for the shortest and reasonable duration after the operation, we believe that patients' comfort can be increased, as well as recurrent stenoses, by preventing long urinary catheterization times. In this respect, randomized double-blind studies are needed on a greater number of patients.

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