The Long-term Effect of Uretral Dilatation Therapy Combined with Steroid After Internal Urethrotomy

İnternal Üretratomi Sonrası Steroid ile Kombine Edilmiş Üretral Dilatasyon Tedavisinin Uzun Dönem Etkisi

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ABSTRACT

Objective: To present the long-term results of hydrophilic dilatation catheter or steroid-coated hydrophilic dilatation catheter usage in the management of primary urethral stricture.

Methods: Forty-one male patients with a diagnosis of primary urethral stricture shorter than 1.5 cm and no comorbities were included in this study. After application of internal uretrotomy, these patients were randomized into two groups. A steroid-coated (triamcinolone acetonide (1%) 18F hydrophilic dilatation catheter was applied to the patients in group 1 for 2 weeks and an 18F hydrophilic dilatation catheter was applied to the patients in group 2 for 2 weeks, and catheters were removed after 3 days. Uroflowmetry and recurrence rate was used in postoperative follow-ups.

Results: Mean patient age were respectively 45.1±8.0 and 47±8.8(68-29) years. Urethral stricture length was evaluated for group 1 7.4±4.0 mm and group 2 7.8±4.3 mm p:0.79. All patients uroflowmetry value (Q max) were followed up on 6,12,24 and 36 month and results were evaluated. Recurrence of urethral stricture was determined in 3 (13%) patients in group 1, and 3 (15%) patients in group 2 (p<0.05) and statisticaly significant.

Conclusions: As an adjuvant treatment, this method is effortless, low in complications, and hopeful. Certainly, application to larger patient populations is needed to objectively accept its efficiency.

Key Words: Uretral stricture, dilatation, steroid

ÖZET

Amaç: Primer üretral darlıklarda hidrofilik dilatasyon kateteri ve steroid emdirilmiş hidrofilik dilatasyon kateteri kullanımının uzun dönem sonuçlarını göstermek amaçlandı.

Yöntemler: Primer üretral darlık tanısı 1.5 cm'den küçük olan komorbiditesi olmayan 41 erkek hasta çalışmaya dahil edildi. İnternal üretrotomi uygulamasından sonra hastalar iki grup halinde randomize edildi. Grup 1'e steroid emdirilmiş (triamcinolone acetonide (%1) 18F hidrofilik kateter 2 hafta süre ile uygulandı, grup 2'ye 18F hidrofilik kateter 2 hafta süre ile uygulandı ve ameliyat sonrası 3. gün hastaların sondaları çekildi. Ameliyat sonrası takiplerde üroflowmetri ve tekrarlama oranları kullanıldı.

Bulgular: Ortalama hasta yaşları sırasıyla 45.1±8.0 ve 47±8.8 (68-29) yıl idi. Üretral darlık uzunluğu grup 1 için 7.4±4.0 mm, grup 2 için 7.8±4.3 mm idi(p=0.79). Bütün hastaların üroflowmetri oranları (Q max) 6, 12, 24 ve 36. aylarda ölçülerek değerlendirildi. Grup 1'de 3 (%13) ve grup 2'de 3 (%15) hastada üretral darlığın tekrarı izlendi ve bu istatiksel olarak anlamlı bulundu.

Sonuç: Ek tedavi olarak bu metod zahmetsiz, düşük komplikasyonlu, ve ümit vericidir. Şu an için bu metodun etkinliğinin objektif değerlendirmesi için daha geniş sayıda hasta grubuna ihtiyaç vardır.

Anahtar Sözcükler: Dilatasyon, steroid, üretral darlık

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INTRODUCTION

Urethral stricture (US) is a narrowing of the urethra due to spongiofibrosis and scars. Which functionally has the effect of obstructing the lower urinary tract. The consequences of this obstruction can enormously impair the patient's quality of life by causing micturition disturbances; they can also damage the entire urinary tract, resulting in loss of renal function. It must be treated , which can occur at any age. The prevalence is estimated at around 0.9% (1). Morphologically, the stricture is an alteration of the urethra by scarring. This spongiofibrosis is a reaction to various extrinsic irritants and can lead to complete replacement of the spongy tissue by scar tissue (2).

Etiology of the US consisted of sexually transmitted disease, perineal trauma, urologic instrumentation, and iatrogenic causes. Around 30% of urethral strictures are idiopathic. In these cases the most likely trigger is considered to be some forgotten minor trauma that occurred a long time in the past (3).

The short -term success rate of IU varies between 39-73% if urethral strictures shorter then 1.5 cm, however long-term recurrence rate is 56% (4). Self catheterization, intralesional steroid or application of mitomycin have been used for less recurrences rate (5).

We aimed to compare recurrence rate of self catheterization and self catheterization with steroid after internal urethrotomy (IU) in patients who had primary bulber US.

METHODS

Fourty one male patients in whom had diagnosed primary bulber US between 2004 and 2007 were included in this study. All patients were been assesment with urine culture, uroflowmetry and ultrasonography. We used urethrocystoscopy and retrograde urethrocystography for determining length and localization of the stricture. Same case's urine culture was infected so their operation were done with antibiotic prophylaxis. A steroid-coated (triamcinolone acetonide (1%) 18F hydrophilic dilatation catheter was applied to the patients in group 1 and an 18F hydrophilic dilatation catheter was applied to the patients in group 2.

Of all patients operation were performed with 21 F urethrotome and used cold knife for IU. Patients with stricture >1.5 cm, in length, additional obstructive pathologic conditions except urethral stricture were exluded.

Statistical analysis was performed by SPSS 12. We used Mann-whitney U for comparison of Q max values and chi- square for comparison of recurrences.

RESULTS

Patients mean age was Group 1 45.1±8.0 (64-29) and Group 2 47±8.8 (68-29) p:0.47. When the patients were eveluated with special emphasis to the etiology urethral instrumentation in 12 (29%) of 41 patients, trauma in 3(7%) of 41 patients, urinary infection in 7(17%) of 41 patients were identified and idiopatic cause was identified 19 (46%) of 41 patients.

Urethral stricture length was evaluated with urethrocystoscopy and retrograde urethrocystography and results for group 1 was 7.4±4.0 mm and group 2 was 7.8±4.3 mm p:0.79. We found that two groups were similar. All patients uroflowmetry value (Q max) were followed up 6, 12, 24 and 36. months and results were presented on Table 1 and Figure 1.

Recurrence of urethral stricture was determined in 3 (13%) patients in Group 1, and 3 (15%) patients in Group 2 (p<0.05) and were also statisticaly significant.

Table 1: Comparison of mean maximum flow rate values of two groups.

Q max (ml/sn)	Group 1(22)		Group 2 (19)		p value
Preoperative	8.18±2.1	(11-4)	8.4±1.8	(12-3)	0.77
6. month	17.5±4.4	(28-12)	18±4.5	(26-13)	0.73
12. month	18.0±4	(28-14)	17±4.7	(26-12)	0.88
24. month	18.6±4.6	(24-10)	17.6±4.1	(26-11)	0.65
36. month	17.9±4.4	(28-12)	18.4±4.3	(27-12)	0.73

DISCUSSION

In the course of medical history, the treatment of urethral stricture ranged from catheterization, dilation, IU and open reconstruction of the urethra. With the rise of endoscopic equipment firstly were used in 1865 and IU widely was accepted fort the initial management of short segmental urethral stricture (6). The long term and short term results of IU have been evaluated and the success rate reported as 23–83% in several articles (7,8).

Although a lot of different methods have been used for reducing the recurrence rate after IU, it should be continued for a long duration of time, possibly permanently. The short term results with self intermittent catheterization, Foley catheter placement and urethral stent has unfortunately been proved to be insufficent (9). After the primary treatment, stricture can occur generally in two years so that we followed patients through three years (10).
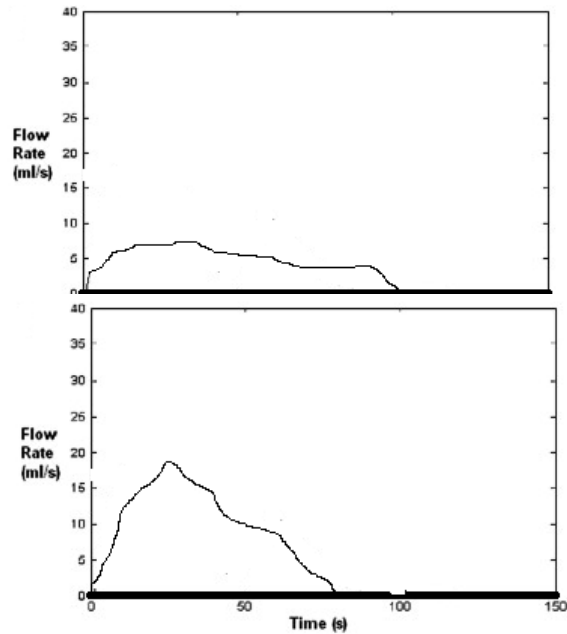

Figure 1. Preoperative and postoperative uroflowmetry results same patient in group 1

It is known that urethral stricture etiology contributes to hypertrophic scar tissue caused by fibroblast proliferation at the tunica propria. IU provides a secondary wound healing process by aiming to dissect the scarred epithelium. In the secondary wound healing, epithelization commences from the wound edges. If this epithelization can be completed before wound contraction, IU may be succesfuly. Wound contraction is provide by myofibroblast, which have been differentiated from fibroblasts and in which many ultrastructural and functional properties are equivalent to smooth muscle cells. During the wound healing process, the migration and proliferation of fibroblast begins on second day and proliferation of collagen and fibroblast continues for the following 2 weeks (11). If any medication or intervention can delay wound contraction at this stage, the probability of recurrent stricture can decrease (12).

Steroids are known to decrease the amount of collagen fibers and fibroblasts and inhibit the proliferation of fibroblasts in wound tissue so that local administration of steroids may may be benefical for the treatment of urethral stricture by preventing wound contraction and, thus recurrence (13). Karhonen et al. indicated that the results of patients who were treated with intralesional steroid injections after IU are poor, and self dilatation may be a better adjuvant therapy (11). Another study have reported the benefical effects of circular steroid injections to be better than applied directly in to the stricture (14).

A recent study has been related about the effect of intraurethral mitomycin-C (MMC) on the urethral stricture in a rat model. They infused 2 mg/L and 10 mg/L of MMC solution via the urethra for 5 min and reported good results in prevention of urethral fibrosis. They recommended low dose intraurethral MMC following IU (15).

Our study is a prospective and randomized study. We compared Q max value and it was observed that, the outcomes of two groups were smiliar. Regarding long-term, there was no advantage about Q max but, when we compared to the reccurance rate, the rate was significantly low in Group 1 with respect to Group 2. The limitation of the study was to study small number of patients. Application to larger patient populations is needed before accepting its efficiency objectively.

CONCLUSION

Based on this study, evaluated of effectiveness self catheterization with steroid after IU in patients who had primary bulber US. This method is effortless, low in complications, and hopeful. Certainly, application to larger patient populations is needed before accepting its efficiency objectively.

Conflict of Interest
No conflict of interest was declared by the authors.

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