



# Efficacy of oral steroids after optical internal urethrotomy in reducing recurrence of urethral strictures

*Üretra darlıklarının rekürensini azaltmada optik internal üretrotomi sonrası uygulanan oral steroidlerin etkinliği*

Sandeep Gupta , Sayak Roy , Dilip Kumar Pal

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## ABSTRACT

**Objective:** Optical internal urethrotomy is a feasible modality of treatment for short segment bulbar urethral strictures. Recurrence is an important problem after urethrotomy. This study aimed at evaluating the efficacy of oral steroid (deflazocort) in reducing the recurrence of strictures after urethrotomy. Up to date, no study has evaluated the role of oral steroids after urethrotomy.

**Material and methods:** In this case-control study, patients undergoing urethrotomy (bulbar urethral strictures <2 cm) were divided into two groups according to patients receiving (Group 1) or not receiving (Group 2) oral steroid (deflazocort 6 mg tablets) after operation. Both groups were controlled at 1, 3 and 6 months after catheter removal (usually 5-6 days after operation) with uroflowmetry, and the flow rates were statistically compared. Deflazocort was given after catheter removal, at first 6 mg twice daily for two weeks, then 6 mg once daily for another two weeks (self-obturation was not performed).

**Results:** A total of 72 patients were selected for the study as per inclusion criteria. They were divided into 2 groups as those receiving (Group 1: deflazocort group; n=36) or not receiving (Group 2; n=36) deflazocort. Median postoperative maximum flow rates in the deflazocort group were 26.2, 22.3 and 18.2 mL/sec, and in the control group was 24.4, 17.1 and 13.7 mL/sec at postoperative 1., 3. and 6. months, respectively. Lesser patients in the deflazocort group had recurrence. The difference was statistically significant only at postoperative 3 (p value=0.03), and 6. months (p value=0.02) (p value=0.15).

**Conclusion:** Oral steroids can be used after internal urethrotomy to reduce the recurrence of urethral strictures.

**Keywords:** Deflazocort; steroids; stricture; urethrotomy.

## ÖZ

**Amaç:** Kısa segmentli bulber üretra darlıklarında optik internal üretrotomi uygulanabilir bir tedavi yöntemi-dir. Üretrotomiden sonra nüks önemli bir sorundur. Bu çalışma üretrotomi sonrasında darlıkların nüksünü azaltmada oral steroidin (deflazokort) etkinliğini değerlendirmeyi amaçlamıştır. Şimdiye kadar hiçbir çalışma üretrotomiden sonra oral steroidlerin rolünü değerlendirmemiştir.

**Gereç ve yöntemler:** Bu olgu kontrollü çalışmada, bulber üretra darlıkları 2 cm'den kısa hastalara üretrotomi uygulanmıştır. Bu hastalar ameliyattan sonra oral steroid (deflazokort 6 mg'lık tabletler) alanlar (n=36) ve almayanlar (n=36) olmak üzere iki gruba ayrılmıştır. Her iki grup kateter çıkartıldıktan sonraki 1., 3. ve 6. aylarda (genellikle ameliyattan 5-6 gün sonra) üroflowmetriyle kontrol edilmiş ve akım hızları istatistiksel yöntemle karşılaştırılmıştır. Kateter alındıktan sonra ilk iki hafta günde iki kez 6 mg, daha sonraki iki hafta günde iki kez 6 mg dozda deflazokort verilmiştir (kateter tıkalı değildi).

**Bulgular:** Çalışmaya alınma kriterlerine göre toplam 72 hasta seçilmiştir. Bu hastalar 2 gruba ayrılmıştır (36'sı deflazokort almış, 36'sı almamıştır). Ortalama postoperatif maksimum akım hızları 1., 3. ve 6. aylarda sırasıyla deflazokort grubunda 26.2; 22.3 ve 18.2 mL/s ve kontrol grubunda 24.4; 17.1 ve 13.7 mL/s idi. Deflazokort grubunda daha az sayıda hastada nüks saptanmıştır. Farklılık 1. ayın aksine (p=0,15) 3. (p=0,03) ve 6. (p=0,02) aylarda istatistiksel açıdan anlamlı idi.

**Sonuç** Üretra darlıklarında nüks oranını azaltmak için internal üretrotomi sonrasında oral steroidler kullanılabilir.

**Anahtar Kelimeler:** Deflazokort; steroidler; darlık; üretrotomi.

**ORCID IDs of the authors:**  
S.G. 0000-0002-7647-3950;  
S.R. 0000-0002-6858-9902;  
D.K. 0000-0001-8929-0961

Institute of Post Graduate  
Medical Education and  
Research, Kolkata, India

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**Correspondence:**  
Dilip Kumar Pal  
E-mail:  
drdkpal@yahoo.co.in

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## Introduction

Urethral strictures can occur due to trauma, infection, ischemia, inflammation, or unknown causes. As a result, scar tissue forms in the epithelium, which leads to decrease in caliber of the urethral lumen. Internal urethrotomy is a safe first-line treatment for urethral strictures independent of etiology and location, with an overall primary success rate of 60-70%. Internal urethrotomy is usually indicated for strictures that are located in the bulbar urethra and are less than 1.5 cm in length, with minimal spongiositis. High rates of recurrence have been seen with internal urethrotomy. Several adjuvant interventions have been proposed to minimize the recurrence rate of urethral strictures after internal urethrotomy. Corticosteroids decrease the scar formation by reducing collagen and glycosaminoglycan synthesis and expression of inflammatory mediators.<sup>[1]</sup>

Although intralesional steroid injection has been shown to provide good results after internal urethrotomy, no study has evaluated the efficacy of oral steroids after the same procedure. In this study, we have endeavored to assess the role of oral steroids in reducing postoperative recurrence. We have used deflazocort as the oral steroid in this study. This study aimed at evaluating the role of oral deflazocort in the reduction of the chance of stricture recurrence after optical internal urethrotomy (OIU).

## Material and methods

In this hospital based case-control study, all the patients undergoing optical internal urethrotomy during the time interval between July 2015 to May 2016 were divided into two groups by alternate allocation. One group (case group) received oral deflazocort after urethrotomy, and the other group (control group) did not receive it. The inclusion criteria were short segment bulbar urethral strictures (upto 2 cm), and patients with strictures >2 cm, strictures in other parts of urethra other than bulbar urethra, pan-anterior urethral strictures, post-anastomotic urethroplasty strictures, post-TURP strictures, UTI, neurogenic bladder and previous history of corticosteroid use were excluded from the study. The patients in Group 1 were given oral deflazocort tablets after catheter removal about 5-6 days following urethrotomy. Deflazocort was prescribed at a dose of 6 mg tablets, twice daily for 2 weeks and then once daily for 2 weeks amounting to total 4 weeks of oral deflazocort therapy. In both groups, for the purpose of the study, the patients were not advised self-obturation after catheter removal to see exclusively the effect of steroid.

Then, patients were followed up with uroflowmetry at postprocedural 1., 3., and 6. months. The first postoperative uroflowmetry was done at the completion of 4 weeks of oral steroid therapy. The follow-up uroflowmetry patterns were assessed for improvement of flow pattern after OIU and adjuvant oral steroid therapy, and the two groups were compared. Recurrence was defined as maximum flow rate <10 mL/sec as detected on uroflowmetry with bothersome symptoms.

## Statistical analysis

Statistical analysis was done using Student t- test and *chi-square* test. P-value of less than 0.05 was taken as statistically significant.

## Results

A total of 84 patients underwent internal urethrotomy during the study period. Out of them, 72 patients fulfilled the inclusion criteria. They were divided into two groups of 36 patients each (case and control groups). The median (range) age of the patients was 37.4 (18-73 years). Median preoperative maximum flow rate on uroflowmetry was 7.7 mL/sec. The median postoperative maximum flow rates as recorded on uroflowmetry in the deflazocort group were 26.2, 22.3 and 18.2 mL/sec at 1., 3., and 6. months, respectively. The mean postoperative maximum flow rates as recorded on uroflowmetry in the control group were 24.4, 17.1 and 13.7 mL/sec at 1., 3. and 6. months, respectively (Table 1). In the deflazocort group, 7 patients had recurrences (none of them at 1. and 3. postprocedural months, but all of them at 6. months). In the control group, 13 patients had recurrences (none at 1 month, 4 at 3 months and 9 at 6 months). On statistical analysis, it was seen that the difference between mean maximum flow rates between the two groups was statistically significant at 3., and 6. postprocedural months (p values=0.03, and 0.02, respectively) but not at 1. month (p value=0.15).

## Discussion

Optical internal urethrotomy is a feasible option for short segment bulbar urethral strictures, but it is not free from the risk of recurrence. There have been studies that have evaluated the efficacy of intralesional steroid injections (like triamcinolone), and also mitomycin C after urethrotomy to assess their role in reducing stricture recurrence rates.

Tabassi et al.<sup>[1]</sup> in 2011 reported study on 70 patients treated by internal urethrotomy 34 with intraurethral submucosal triamcinolone injection and 36 without it. Recurrence rate was lower and time to recurrence was longer in the steroid group.

Kumar et al.<sup>[2]</sup> in 2012 studied 50 patients with urethral strictures <3 cm treated with Holmium laser with intralesional triamcinolone (80 mg) under spinal anesthesia. The overall recurrence rate was 24%. The success rate in patients with strictures less than 1 cm in length was 95.8%, whereas that in patients with strictures of 1 to 3 cm in length it was 57.7%.

**Table 1. Table showing mean postoperative maximum flow rates of the patients in the case and control groups**

Mean post-op Qmax (mL/sec)	Deflazocort group	Control group	p
At 1. month	26.2	24.4	0.15
At 3. months	22.3	17.1	0.03
At 6. months	18.2	13.7	0.02

A study was conducted by Kumar et al.<sup>[3]</sup>, to assess the efficacy of OIU combined with intralesional injection of Triinject<sup>®</sup>(triamcinolone, mitomycin-C and hyaluronidase), and it was found that success rate increased from 80.6% to 94.2% for short-segment anterior urethral strictures.

Another study in 2015 by Modh et al.<sup>[4]</sup> assessed the outcome of intralesional steroid injection after internal urethrotomy, and found that it helped to reduce recurrence rate of strictures when steroid was injected at high doses. Other studies have found mixed results with intralesional injections.<sup>[5-7]</sup>

We used deflazocort in this study. Deflazocort is a corticosteroid, which is actually a prodrug. It was introduced in 1969. It is an oxazoline derivative of prednisolone with anti-inflammatory and immunosuppressive activity. It has good safety profile amongst steroids and can be given without any serious side-effects. Usual dosage is 6 mg once or twice daily. It is mainly excreted in urine (70%). It should be used with caution in patients with liver disease, in pregnancy and during lactation.

In our study, there was significant difference in the postoperative flow rates between the two groups, with the deflazocort group patients having better flow rates at 3. and 6. months of the follow-up period (keeping in mind that they were not doing self-obturation). This shows that there was progressive worsening of flow pattern and rates in both groups, but more so in the control group and much less in the deflazocort group. Also, more patients in the control group had recurrences in the long term. So, deflazocort was shown to be effective in reducing the recurrence of strictures and also maintain fairly good flow rates (relatively) after internal urethrotomy.

This study has certain limitations. Firstly, the follow-up period for assessment is a maximum of 6 months which actually is inadequate in the true sense, because recurrence of urethral strictures and reduced flow can occur much later on in many cases, and longer follow-up periods (more than 1 year) are actually needed to arrive at more conclusive decisions. But, incorporating a longer follow-up period was beyond the scope of our study. Definitely, more studies with longer follow-up times are needed to further establish the efficacy of oral steroids. Secondly, advising the patients against doing self-obturation after internal urethrotomy is not the usual practice (self-obturation is the rule after urethrotomy), but we have advocated it purely for the purpose of our study, so that the effect of self-obturation does not mask the effect of deflazocort.

In conclusion, it can be said that using adjuvant oral steroids like deflazocort (which has a good safety profile) can be effective in reducing recurrence rates after internal urethrotomy, and it can also maintain somewhat better flow rates postoperatively and thus alleviate bothersome symptoms of the patient in a better way. We felt that oral steroid therapy should have an advantage over intralesional injection in that longer duration of therapy can be maintained. There is no problem regarding patient compliance and evaluation will be more precise.

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