

# Effect of Early Urethral Dilatation in Prevention of Complications in Hypospadias Patients after Urethroplasty

Mohammad Vaheid. Hosseini<sup>1</sup> Zahra. Zarei<sup>2</sup> Abbas. Rahimi<sup>1</sup> Shahram. Zare<sup>3</sup>

Assistant Professor Department of General Surgery<sup>1</sup>, General Surgen<sup>2</sup>, Associate Professor Department of Community Medicine<sup>3</sup>, Hormozgan University of Medical Sciences, Bandar Abbas, Iran.

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## Original Article

### Abstract

**Introduction:** Hypospadias is a common congenital malformation in boys. One of the common surgical techniques for correction of hypospadias is (Tubularized Incised Plate urethroplasty=TIP). Meatal stenosis and fistula formation are known post-operative complications. The purpose of our study was to evaluate the effect of early urethral dilatation in prevention of post operative complications.

**Methods:** A randomized clinical trial including 60 patients with distal hypospadias who underwent tabularized incised plate urethroplasty with or without dilatation was conducted in Bandar Abbas children hospital in 2011. Patients were divided in two groups. The number of the patients and mean age were not different in two groups. Urethral dilatation was started in first group at two weeks following surgery and continued for six months. The patients of second group were followed without urethral dilatation. All patients were followed for occurrence of complications for one year. Chi-Square and t-test were used to compare the groups.

**Results:** In the first group the early fistula, late fistula, stenosis, hematoma, urinary infection, cutaneous necrosis, and wound dehiscence were developed in 16.7%, 6.7%, 10%, 26.7%, 13.3%, 10%, and 20% of the patients, respectively. In the second group these complications were seen in 10%, 6.7%, 3.3%, 13.3%, 6.7%, 3.3%, and 6.7% of the patients, respectively. Statistical analysis of results showed no significant differences between two groups in rate of complications.

**Conclusion:** Early urethral dilatation after urethroplasty has no significant effect on post-operative complications.

**Key words:** Hypospadias – Fistula – Dilatation.

Correspondence:  
Z. Zarei, MD.  
Surgery Department Shahid  
Mohammadi Hospital.  
Hormozgan University of  
Medical Sciences.  
Bandar Abbas, Iran  
Tel: +98 917 7052218  
Email:  
Zahrazarei9063@yahoo.com

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### Introduction:

Hypospadias is one of the most common genital diseases in boys created due to early stop in urethral formation from the eighth to twelfth

embryonic week. The various surgical techniques are used to treat this disease whose the most common is tabularized incised plate urethra plasty (TIP) (1).Meatal stenosis and fistula formation are operative complications for correction of

hypospadias. Applying early urethral dilatation with different results is one of the techniques to prevent creating post operative complications.

The purpose is to clarify the effects of early dilatation to prevent fistula formation and other complications after TIP in hypospadias patients.

### Methods:

We conducted a prospective clinical trial in hypospadias patients attending Bandar-abbas children hospital in 2011.

All studied patients were in distal hypospadias who underwent TIP. The patient were divided every other one in two groups. Regarding 60 people were under study; the patients were divided into two 30-people groups.

The individual who were circumcised or underwent operation or had various genital complications were eliminated from the study.

In All cases, operation was done under public anesthesia by a surgery team. After covering the surgery point with betadine solution, firstly glans is sewn with a stretch suture made of silk string.

Then a 7-9 mm wide urethral based on phallus size was determined. A longitudinal incision paralleled with urethral plate from glans to hypospadias span in two sides of plate using surgical blade 15 was created which followed by creating a crosswise incision on urethral skin, which U-form incision in urethral plare was completed. Then a 5-7mm curved cut in proximal beside coronal from two-sided longitudinal cuts were created by using tenotomy scissors and foreskin is opened. A longitudinal cut in middle line of urethral plate from glans to 2mm from proximal urethral opening was created. The tissues around urethral plate were released so that tying up glans is without traction. Then urethral plate was tabularized by using a blue Nelaton catheter and was circumcised by using subcutaneous separated sutures and string (PDS 6-0).

Epithelium of urethral plate turned inside and the new formed urethral was covered by subcutaneous flap full of-vessels using string (PDS5-0).

Then glans wings approached in two layers under minimum traction.

The first layer by string (PDS 6-0) and the second one by string (PDS 5-0) were stitched. Circumcision was done, and the foreskin in

ventral side and the middle line was stitched by string (PDS 4-0). Finally catheters were stitched to foreskin and were bandaged and catheters were kept there for a week.

Catheters in new urethral of all patients were removed after the first week.

Then the patients in the first group underwent daily dilatation by using blue Nelaton on the second weekend. This dilatation is not done for the second group patients.

The dilatation method was trained to patients' parents to do daily at home. The training was under direct observation of surgery team.

In a few patients dilatation was done by the parents under surgery team consideration in the first several days to make sure that all parents are able to do in a desired and acceptable level. The distribution of all parents in doing dilatation and necessary following was desirable. In the first month after operation, the patients are visited and examined weekly and during a year done monthly. And they were analyzed in the complications like, early fistula (created in the first month after operation), late fistula (created after the first month after operation), stenosis, urinary infection, hematoma, cutaneous necrosis and wound dehiscence.

Chi-Square, Fisher Exact test and t-test were used for data analysis. P-value<0.05 was considered significant.

### Results:

Totally 60 patients participated in the study. They were divided every other one into two groups (30 patients for every group). The average age in the first group was  $43.30 \pm 28.672$  month and in the second one  $38.73 \pm 23.635$  month (pvalue=0.504).

In a group with post operation dilatation, five patients (16.7%) suffered from early fistula and two patients (6.7%) suffered from late fistula. the number in the second group (the group with no dilatation) were respectively three (10%) and two (6.7%) patients.

Pvalue in both groups was 0.353 for early fistula and 0.694 for late fistula meaning that there was no significant difference between two groups in presenting the complication.

Three patients (10%) in the first group and a patient (3%) in the second group were afflicted with stenosis which, P-value=0.306 showed no

significant difference. Hematoma was seen in eight patients in the first group (about 26.7%) and four patients in the second group (13.3%).

Urinary infection was observed in four patients of the first group and two persons in the second one. Cutaneous necrosis in three patients of the first group and a patient of the second group and wound dehiscence in six persons of the first group and two persons in the second group occurred. P-value in all the above cases was higher than 0.05 meaning that there is no noticeable difference between two groups. The results have been collected in table 1 (Table 1).

**Table 1- The presentation rate of symptoms in groups I and II**

Complication	Case	Control	P-value
Early Fistula	5 (16.7%)	3 (10%)	0.353
Late Fistula	2 (6.7%)	2 (6.7%)	0.694
Stenosis	3 (10%)	1 (3.3%)	0.306
Hematoma	8 (26.7%)	4 (13.3%)	0.167
Urinary Infection	4 (13.3%)	2 (6.7%)	0.335
Skin necrosis	3 (10%)	1 (3.3%)	0.306
Dehiscence	6 (20%)	2 (6.7%)	0.127

**Conclusion:**

Hypospadias is a common congenital genital malformation in boys and surgery is used as the main treatment.

TIP is one of the newest techniques. Due to many advantages like simplicity, low complication and best result, TIP is considered and accepted by many surgeons using to restore various hypospadias (2).

In a study by ekmel et al. (2008), TIP is recognized as the best method to restore hypospadias (3).

TIP application in people circumcised is another advantage (2). Known symptoms after correcting hypospadias include bleeding, hematoma, stenosis, and urethral fistula to skin, adhesion, urethral diverticulum, wound infection and disorder in correcting wound. Bleeding and hematoma are the most common post operation symptoms which need compression bandage and immediate and re-exploration should be considered if bleeding continues (4).

The most important reason for stenosis may be technical. In light cases and urethral dilatation to correct the complication suffices but other steps are required in severe cases.

Suspicion to urethral fistula to skin is usually posed from the parents proved by clinical examination and contrast injection. Fistula formation is usually due to stenosis or distal urethra adhesion and along with them. Lack of success to cover completely epithelium edges in urethroplasty is another reason for fistula formation. Infection is an uncommon complication to correct hypospadias. Stenosis is seen more in proximal correction improved by urethrotomy endoscopy in 50% cases (4).

Many studies and researches in different centers are done to treat and prevent symptoms formation.

A method is to apply early urethral dilatation after pulling out the catheters which have been placed in a new tract during surgery. Urethral dilatation is easy, painless and application by parents at home (5). The result has been different and there is not overall agreement among surgeons about using this technique and its effect on preventing stenosis and fistula formation.

Lorenzo and Snodgrass, believed that dilatation is not essential in post operation (5). In the other side, according to an article by Bekri in 1999, dilatation in post operation is necessary to prevent complications like stenosis (6).

We tried to study the hypospadias distal patients under TIP during a year in Banda abbas children hospital and effectiveness of dilatation to form fistula after urethroplasty. We analyzed other variables such as stenosis, hematoma, urinary infection, cutaneous necrosis and wound, too. After a year, the result did not show a meaningful difference in creating and presenting stenosis and late or early fistula between two groups.

Our result is comparable with Lorenzo's in Texas university in 2002 (5). He also showed that dilatation of new urethral after urethroplasty is not vital to prevent stenosis. Our results are different from Al bekris' in 1999.

Different results may be related to difference in study populations and surgeon's skill and technical problems.

The limitations are low number of patients due to rarity of the disease and lack of direct observation on dilatation by the parents at home. But all patients were operating by a surgeon and a surgical team. And the same surgical team trained the parents. The results about other variables have been shown in table 1. No case indicates

significant effect of dilatation on symptoms prevalence.

In most studies, the factors such as stenosis and fistula were analyzed, but we have tried to analyze more.

According to our study and others, dilatation after urethroplasty in the patients with hypospadias has no effect on preventing symptoms such as fistula formation and stenosis in post operation.

However, it seems that more studies with more patients and longer follow-up can be helped to clarify this issue.

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## بررسی تأثیر دیلاتاسیون زود هنگام پیشابراه در جلوگیری از عوارض در بیماران هیپوسپادیس پس از یورتروپلاستی

سیدمحمدوحید حسینی<sup>۱</sup>، زهرا زارعی<sup>۲</sup>، عباس رحیمی<sup>۱</sup>، شهرام زارع<sup>۳</sup>

<sup>۱</sup>استادیار، گروه جراحی، <sup>۲</sup>جراحی عمومی، <sup>۳</sup>دانشیار، گروه پزشکی اجتماعی، دانشگاه علوم پزشکی هرمزگان، بندرعباس، ایران.

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### چکیده

**مقدمه:** هیپوسپادیس یکی از آنومالی‌های مادرزادی شایع ژنیتال در پسرها می‌باشد. یکی از درمان‌های رایج جراحی هیپوسپادیس، روش Tubularized Incised Plate Urethroplasty (TIP) است. فیستول و تنگی دهانه پیشابراه از عوارض شناخته شده پس از جراحی می‌باشد. هدف این مطالعه بررسی تأثیر دیلاتاسیون زود هنگام پیشابراه در جلوگیری از ایجاد عوارض پس از عمل می‌باشد.

**روش کار:** یک کارآزمایی بالینی با شرکت شصت بیمار مبتلا به هیپوسپادیس دیستال که در مدت یک سال تحت عمل جراحی تیپ قرار گرفته بودند، انجام شد. بیماران به صورت یک در میان در دو گروه قرار گرفتند. این دو گروه از نظر تعداد و میانگین سنی مشابه بودند. در بیماران گروه اول دیلاتاسیون روزانه پیشابراه با استفاده از نلاتون دو هفته پس از عمل آغاز و به مدت شش ماه ادامه یافت. در بیماران گروه دوم دیلاتاسیونی صورت نگرفت. بیماران به مدت یک سال از نظر ایجاد فیستول و تنگی و سایر عوارض پس از عمل تحت بررسی قرار گرفتند.

**نتایج:** در گروه اول فیستول زودرس، فیستول دیررس، تنگی، هماتوم، عفونت ادراری، نکروز پوستی و جداسازی زخم به ترتیب در ۱۶/۷ درصد، ۶/۷ درصد، ۱۰ درصد، ۲۶/۷ درصد، ۱۳/۳ درصد، ۱۰ درصد و ۲۰ درصد از بیماران دیده شد. این عوارض در گروه دوم به ترتیب در ۱۰ درصد، ۶/۷ درصد، ۳/۳ درصد، ۱۳/۳ درصد، ۶/۷ درصد، ۳/۳ درصد و ۶/۷ درصد از بیماران دیده شد. در آنالیز آماری هیچ یک از این تفاوت‌ها معنی‌دار نبود.

**نتیجه‌گیری:** دیلاتاسیون زود هنگام پیشابراه پس از عمل ترمیم هیپوسپادیس تأثیری در میزان بروز عوارض پس از عمل ندارد.

**کلیدواژه‌ها:** هیپوسپادیس - فیستول - دیلاتاسیون.

نویسنده مسئول:  
دکتر زهرا زارعی  
بخش جراحی دانشگاه علوم پزشکی  
هرمزگان  
بندرعباس - ایران  
تلفن: +۹۸ ۹۱۷ ۰۲۲۱۸  
پست الکترونیکی:  
zahra.zaei@yahoo.com

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