

## ORIGINAL ARTICLE

**Results of Tip Urethroplasty in Distal Penile Hypospadias in Pediatric Patients**SAQIB ISMAIL<sup>1</sup>, TAHSEEN ISMAIL<sup>2</sup>, SYED ZAKIR HUSSAIN SHAH<sup>3</sup>, SADIA RASHEED<sup>4</sup>, AQDAS SAQIB<sup>5</sup>, RABIA MEMON<sup>6</sup><sup>1</sup>Associate Professor of Pediatric Surgery, Div. HQ Teaching Hospital, Mirpur Azad Kashmir<sup>2</sup>Assistant Professor, Mohi-Ud -Din Islamic Institute of Pharmaceutical Sciences, Mirpur Azad Kashmir<sup>3</sup>Assistant professor pediatric surgery AJKMC Muzaffarabad<sup>4</sup>Assistant Professor Plastic/ Reconstructive Surgery and Burns Unit, LUMHS, Jamshoro/ Hyderabad<sup>5</sup>Consultant pediatrician, Al Seha Hospital, Mirpur Azad Kashmir<sup>6</sup>Postgraduate Student Plastic Surgery, LUMHS, Jamshoro

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**ABSTRACT****Background:** Distal penile hypospadias is one of the common congenital abnormality. It is the anomaly of anterior urethral and penile development.**Objective:** The purpose of the study is to find the outcomes of TIP urethroplasty in distal penile hypospadias in the pediatric patients.**Study design:** This retrospective study was conducted at the urology department of our institute hospital for the duration of six months from February 2022 to July 2022.**Material and Methods:** Out of all the patients that visited hospital during a course of 1 year, 250 had distal penile hypospadias. There were 45 individuals that were less than 2 years of age, while the remaining patients were more than 2 years of age. There were 210 patients that were included in the de novo hypospadias type and 40 had recurrent type of hypospadias.**Results:** Chordee was found in case of 50 patients, most of the patients had their chordee disappeared during the degloving of the penis. Running sutures were in use of 200 patients while 50 reported about interrupted use of suturing. There were 25 patients that used no stent after surgery, however, the stent was used by 150 patients for 3 days.**Conclusion:** TIP urethroplasty is an effective and reliable method that can be used for the treatment of distal penile hypospadias as it has less rate of complications and is suitable for primary as well as redo operations. It covers neourethra by the moving corpus spongiosum or by any flap.**Keywords:** TIP urethroplasty and penile hypospadias.**INTRODUCTION**

Distal penile hypospadias is one of the common congenital abnormality. It is the anomaly of anterior urethral and penile development. In this anomaly urethra is observed to be on the bottom rather than the tip of penis. The malformation type and extent varies in different cases. It is due to abnormal embryological development of urethral fold and the ventral foreskin of the penis. The anomalous ventral curvature of penis is the most severe form. There are different stages of hypospadias<sup>1-2</sup>; some are minor and other are acute. The majority are anterior hypospadias and some are posterior hypospadias. Distal hypospadias is the most common form in the pediatric that urologist treats. Every 1 out of 300 live birth die due to this complication. The posterior hypospadias constituting only 13% cases. In some cases the penis also curves downward slightly<sup>3-4</sup>. The etiology of hypospadias is not known yet. Endocrinologic mechanisms have a vital role because androgen stimulate penile growth and development. Different methods and techniques are developed to cure this disease. The common one is tubularized incised plate urethroplasty (TIP). TIP is successfully used for proximal hypospadias, re-operative and primary adult hypospadias. For surgical therapy, age is a primary factor. In under developed countries, due to lack of awareness a large number of birth are still conducted at home that is the main reason of such congenital diseases<sup>5-7</sup>. The major aspect of this study is to analyze the different factors that affect TIP urethroplasty repair in pediatric patients. The main purpose of hypospadias therapies is to get the penis straight. To increase the TIP techniques outcome several modifications had been made. Many complications such as fistula formation and meatal<sup>8</sup> stenosis can develop indicating the importance of the structural alteration in hypospadias patients. Fistula rate have been reported from 0% to 28%<sup>9</sup>. TIP urethroplasty is an effective method. It is observed to highly use for the treatment of distal penile hypospadias. Different studies has reported that the less rate of complications are associated with the TIP. Success of the operation depend upon different factors. The scarce and limited knowledge about the associated factors and outcomes of TIP urethroplasty is present in literature. The developing countries like Pakistan that are facing economic crises, the health care treatments are expensive. Therefore to reduce the

health care burden there is a need to deeply analyze the factors, study the outcomes and use the effective and cheap technique for treatment<sup>10</sup>. The purpose of the study is to find the outcomes of TIP urethroplasty in distal penile hypospadias in the pediatric patients.

**MATERIAL AND METHODS**

The study was conducted at the urology department of our institute hospital for the duration of six months from February 2022 to July 2022. The institute reviewer committee approved the study. The objective of the study was explained to all the participants. The data from each patient was collected. The one surgeon performed all the operations. The main step was the midline incision of the plate of urethra so that the widening of the urethral plate can be done for tabularization. The demographic features of the patients were recorded i.e, age, complication and type of stenosis. The suture made from polyglactin were used in adults.

The patients were discharged after three days of operation. The latex foley catheter was used. The patients were followed for few days the associated complications were observed and reported. The SPSS software was used for the statistical analysis of the data. The data was analyzed and recorded in the form of tables.

**RESULTS**

The study was carried out on 250 patients that were admitted in the tertiary care unit. Out of all the patients that visited hospital during a course of 1 year, 250 had distal penile hypospadias. There were 45 individuals that were less than 2 years of age, while the remaining patients were more than 2 years of age. There were 210 patients that were included in the de novo hypospadias type and 40 had recurrent type of hypospadias. Chordee was found in case of 50 patients, most of the patients had their chordee disappeared during the degloving of the penis. Running sutures were in use of 200 patients while 50 reported about interrupted use of suturing. There were 25 patients that used no stent after surgery, however, the stent was used by 150 patients for 3 days as shown in table no.1.

Table 1: Features of the patients

Features	No. of patients	Percentage of patients
Age of patients		
Less than 2 years	45	18
More than 2 years	205	82
Chordee		
Yes	50	20
No	200	80
Hypospadias site		
Distal penile	250	100
Hypospadias type		
De novo	210	84
Recurrent	40	16
Covering layer		
Spongioplasty	101	40
Dartos flap	115	45
Both	17	7
Neither	17	7
Techniques of suturing		
Continuous	200	80
Interrupted	50	20
Duration of stent		
No stent	25	10
3 days	31	12
7 days	150	60
10 days	35	14

Table no.2 shows the results and the success rate of TIP urethroplasty in the children. For children who were older than 2 years the success rate was 82% as compared to younger children where the success rate was 74%. For patients that used continuous suturing technique had the success rate 81 which was more than those that had interrupted suturing (71%). The 91% patients were observed to have success rate without stent while the success rate in those patients who had stent is 80%.

Table 2: Results of the TIP urethroplasty in children

Features	No. of patients	Success rate
Age of patients		
Less than 2 years	45	74%
More than 2 years	205	82%
Hypospadias site		
Distal penile	250	80%
Hypospadias type		
De novo	210	80%
Recurrent	40	85%
Covering layer		
Spongioplasty	101	87%
Dartos flap	115	74%
Both	17	82%
Neither	17	73%
Techniques of suturing		
Continuous	200	81%
Interrupted	50	71%
Duration of stent		
No stent	25	91%
Yes	225	80%

The complications that are reported by patients after TIP urethroplasty in case of distal penile hypospadias are shown in table no.3. Majority of the patients reported about single fistula and meatal stenosis, however neourethral stricture was also observed in 3 patients. Approximately 23% complications were reported in the patients. Neourethral stricture was observed in the 3 patients. The dehiscence was reported in the 12 patients.

Table 3: The complications reported after TIP urethroplasty

Complications	Distal penile (n= 250)
Single fistula	28
Multiple fistula and meatal stenosis	11
Meatal stenosis	21
Dehiscence	12
Neourethral stricture	3
Total complication rate	75 (23%)

## DISCUSSION

Repair of TIP hypospadias has become very common and is widely accepted because of low complications and reliable results. The creation of vertical meatus is one of the reasons it is used commonly<sup>11</sup>. There were 250 patients selected for study. All the patients that were not according to the inclusion criteria were excluded from the study. The main step is the midline incision of the plate of urethra so that the widening of the urethral plate can be done for tabularization. As per literature the length of neourethra plays an important role in deciding the success of the operation<sup>12-13</sup>. In this study the results and the success rate of distal penile hypospadias is analyzed. As per studies it was found that the complication rate of TIP urethroplasty is more among adults as compared to the children. In the present study the results and factors were studied for children<sup>14</sup>. The success rate of the repair was more in case of children greater than 2 years of age. The success rate was found to be 74% for children who are less than 2 years of age. These outcomes were explained by the fact that optical magnification was not used for all patients. As per another study the results of TIP urethroplasty showed that there were 2 other complications that were reported after the re-operation cases, including flip flaps and in some cases the patients reported onlay and tabularized flaps<sup>15</sup>. In these scenarios the complication rate was 18-58%. In our study in patients that had covering layer as spongioplasty the success rate was 87 percent as compared to other cases where the covering layer was dartos flap having success rate as 74%. As per previous studies it was reported that one of the main complications were high rate of meatal stenosis leading to fistula formation in addition to dehiscence and stricture, but in cases where fistula was not formed was also included in this category<sup>16-17</sup>. Previously the use of first neourethral tube stitch was made at position distal to the middle glanular stage. Later on it was observed that this procedure led to the high rate of meatal stenosis. As per studies the placement of one stitch away from middle glanular level can help avoid the fistula and meatal stenosis. Another technique that was learned included the incision to be made deeply towards the corpus cavernous so that complications like stenosis and dehiscence can be avoided. In order to create circular neomeatus leads to meatal stenosis in case where the neomeatus is oval<sup>18</sup>. These issues are somewhat important and if dealt with carefully can lead to less complications. The urethral dilatation is still a subject of controversy, it was found that the recurrent neourethral calibration and ultimate urethroscopy can lead to stricture. As per studies it was found that the closing of fistula and betterment in the uroflowmetry by making use of post-operative urethral dilatations carried out regularly is often advised along with urethral calibration<sup>19</sup>. Another studies shown that urethral calibration is not needed unless the patients show any symptom of weak urinary system<sup>20</sup>. In this study out of all the patients selected for study only 10 required urethral calibration. When further testing of these 10 patients was carried out, no case of stenosis was found, that's why there was no need of any further dilation. The complications that are reported by patients after TIP urethroplasty in case of distal penile hypospadias are shown in table no.2. For the patients who experience complications those patients can be treated by fistula closure and redo TIP urethroplasty. Almost 725 of the complications were successfully treated by fistula closure and 100% cases were effectively treated after meatoplasty. As per some studies the redo TIP urethroplasty was preferred by many doctors as the urethral plate that was previously incised looked normal without any formation of scar after the TIP urethroplasty failed<sup>21</sup>. This study has some limitations the study cases were taken from a single hospital, if the patients were taken from different areas then a more precise study can be made. Other limitation can be the lack of comparison of adults and children TIP urethroplasty. If a comparison will be carried out it will help decide which factors are increasing the complication rate in children.

## CONCLUSION

TIP urethroplasty is an effective and reliable method that can be used for the treatment of distal penile hypospadias as it has less rate of complications and is suitable for primary as well as redo operations. It covers neourethra by the moving corpus spongiosum or by any flap. Use of stents and age of patient are some of the features that play important role in the success of operation.

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