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Research Article

## TO EVALUATE THE ROLE OF STENT REMOVAL ON POST-OPERATIVE COMPLICATIONS OF URETHROPLASTY AND HYPOSPADIAS REPAIR AT ALLIED HOSPITAL FAISALABAD

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**Abstract:**

**Background:** The aim of this study was to evaluate the early removal of urethral stent following TIP Snodgrass repair of hypospadias can minimize postoperative complications by using this procedure was the major aim of this research.

**Material and Methods:** For penile hypospadias, there are 41 tabularized incised plate i.e., TIP repairs for surgical procedure in Allied / DHQ Hospital Faisalabad. All the patients were prospectively observed for three years and classified into two groups: There were 20 patients where the urethral stent was removed right after 24 hours after operation and There were 21 patients where the stent was removed in the sixth postoperative day. For all patients, Suprapubic urinary diversion was done and the same surgeon has carried out all the operations. Cosmetic appearance and complications were written at the last follow-up.

**Results:** 3.9 years was the mean age of all the patients with following observations, Urethra-cutaneous fistula was found in two cases in group A i.e., 4.4 %. Eleven patients had fistula in group B i.e., 33.2 % along with a statistically significant difference of  $P < 0.05$ . Meatal stenosis was reported in four patients in group A i.e., 11.1 % and meanwhile twelve patients had such complication in group B i.e., 36.5 % along with a statistically Significant difference of  $P < 0.05$ . In group-A, 4.4 % of wound infection was developed and meanwhile 32.2 % had wound infection developed postoperatively in group B along with statistically significant difference of  $P < 0.05$ . There was complete surgical failure when wound dehiscence occurs. Furthermore, it was observed that there was no significant difference among two groups i.e.,  $p$ -value = 0.1.

**Conclusions:** For all cases of penile hypospadias, tabularized incised plate i.e., TIP repair is a versatile operation that can be employed. Early stent removal, after one day of surgery for hypospadias repair simplifies care after operation. It also greatly minimizes the danger of development of wound infection, meatal stenosis and urethra-cutaneous fistula. It also avoids the requirement of antibiotics.

**KEYWORDS:** Postoperatively, Curvature, Physiology, Meatoplasty, Glanuloplasty.

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**INTRODUCTION:**

Male external genitalia have a comparatively common congenital defect known as hypospadias. Out of 250 newly born males, it is found in approximately one. It may be an isolated fault or may be a phenotypical component of more multifarious condition like as an intersex state. For the definition of hypospadias, we may say that it is a combination of 3 anomalies like: An unusual ventral opening of urethral meatus which can be placed at any place from the ventral aspect of the glans penis to the perineum, An unusual ventral curvature of penis i.e., chordee and an unusual circulation of foreskin with a "hood" present dorsally and deficient foreskin ventrally. In almost all cases, the 2<sup>nd</sup> and 3<sup>rd</sup> attributes are not present. Not only psychological but also functional problems are caused by hypospadias for patients and their parents [1]. Defects constitute the great majority which is 50 % to 70 % of hypospadias in all generally used classification systems like sub coronal both anterior / distal, coronal and glandular. Overall rates have been reported as approximately 20 %, 50 %, and 30 % for posterior/proximal hypospadias, distal, and middle respectively. To create an even-calibre neo-urethra and to correct the chordee terminating in a slit-like neomeatus at apex of reconfigured glans restoring normal physiology and anatomy with minimum complications in hypospadias surgery are the main objectives of treatment [2]. Hundreds of surgical approaches and variations on a theme have been described from earliest recorded description of hypospadias up till the present. Number of early technical reviews and comprehensive accounts of historical aspects are available regarding hypospadias. Without considering the method used for repair of hypospadias and its associated defects, skin coverage, attention to penile curvature and its correction like glanuloplasty, meatoplasty, arthroplasty and urethroplasty are all universal concerns [3]. To repair hypospadias with a one-stage procedure in the 1<sup>st</sup> year of life is the current standard of care and it is on an outpatient basis. In the modern hypospadiology with varying ideas, Snodgrass first described the tabularised incised plate i.e., T.I.P, urethroplasty for distal hypospadias repair in the year 1994 and now it has raised its application to proximal hypospadias along with fantastic outcomes. Its main principles are: Deep longitudinal incision of the urethral plate which allows for its tabularization without the requirement of any extra flaps and the interposition of a barrier layer of dartos pedicle between overlying skin and neourethra which is crucial in minimizing the likelihood of urethra-cutaneous fistula.

In order to minimize the complications, surgeons use little variations in the technique. Mid-glans or tip of the glans are the distal limit of the deep longitudinal incision. The neourethra has a covering flap which is usually elevated from preputial skin. But this could become the cause of penile torsion and devascularization of preputial skin which is commonly used in reconstruction of penile skin. To protect ourselves from such complications, a ventral dartos flap has been used to cover the neourethra [3]. In spite of all the modifications there were complications reported as: hypospadias repair like wound dehiscence, infections, persistent chordee, fistulae, urethral stricture, meatal stenosis and penile torsion. Many efforts at surgical repair in such complex cases have less possibilities to be successful as the penis is densely scarred, significantly shortened, hypo vascular, or immobile. We share our experience with 2 alterations in performing Snodgrass TIP urethroplasty with respect to outcomes and postoperative complications in this research [4]. This is done along with emphasis on wound dehiscence, wound infection, meatal stenosis, urethral stricture and urethra cutaneous fistulae formation. To evaluate that how early removal of urethral stent following TIP Snodgrass repair of hypospadias can minimize postoperative complications by using this procedure was the major aim of this research.

**MATERIAL AND METHODS:**

The duration of this study was from January 2017 to December 2019. There were 41 patients whose age was ranging between 1 to 8 years along with distal i.e., sub coronal and midshaft hypospadias. They underwent (TIP) urethroplasty in Allied / DHQ Hospital Faisalabad. The method applied was as narrated previously by Snodgrass 18, by using 4 / 0 and 5 / 0 Vicryl suture for closure of urethral, dorsal perpetual Flap which was as protective 2<sup>nd</sup> layer on suture line. Moreover, urethral stent was used in the anterior urethra in ranging between six to eight Fr. There as mild chordee observed in few cases which were managed by degloving penile skin. The process of urinary diversion was done by percutaneous suprapubic cystostomy which was removed right after 10 days of operation.

All the under-study population was discharged on the 1<sup>st</sup> operative day. Same surgeon operated all the patients and those patients with the history of severe degree of chordee, circumcision and history of hypospadias surgery were not included in this research. The patients were classified into two groups as: There were 20 patients where the urethral stent was

removed right after twenty-four hours after operation, And There were 21 patients where the stent was removed in the sixth postoperative day. Proper dilatation of neourethra was taught to all the concerned parents and were trained in its use and patients were checked one week, one month and six months after the date of discharge. Fisher's exact test was used to analyse and compare the outcomes and complication rates for both the groups. Moreover, p values less than 0.05 were considered as important.

### RESULTS:

The mean age of the patients was age 3.9 years in which group A comprise 20 patients and group B has 21 patients. Mild Edema and / or bruising was observed in almost all cases without any significant hematomas during the early postoperative period as shown in Table-1.

**Table – I: Distribution of Types of Hypospadias Among The 2 Groups**

Hypospadias type	Group a	Group b
Sub coronal hypospadias	10	11
Midshaft hypospadias	6	7
Pen scrotal hypo.	4	3
Total	20	31

In both the groups' urethra-cutaneous fistula developed as shown in table- 2. In the 1<sup>st</sup> group, only 2 patients in 20 developed 4.4 % fistula but in 2<sup>nd</sup> group, 6 patients had fistula with 33.2 % and it was observed with a difference which was statistically significant as P less than 0.05. In terms of development of meatal stenosis as in table-3, group A has 4 patients with 11.1 % but 2<sup>nd</sup> group has twelve patients with 36.5 %. It was shown with a statistically significant difference as p value was equal to 0.023.

**Table – II: Distribution of Fistulae Among Study Participants**

Fistulae Distribution	Group A	Group B
No fistula	18	18
With fistula	2	3
Total	20	21

**Table – III: Distribution of Stenosis Among Study Participants**

Stenosis Distribution	Group A	Group B
No meatal stenosis	16	17
With meatal stenosis	4	4
total	20	21

There was complete surgical flaw whenever wound dehiscence occurs. It was observed that there is no difference among both the groups and p value is 0.1 as table-4 shows.

**Table – IV: Distribution of Surgical Failure Among Study Participants**

Surgical Failure Distribution	Group A	Group B
Surgery failure (complete dehiscence)	1	5
No dehiscence	19	16
Total	20	21

**Table – V: Distribution of Fistulae Among Study Participants**

Fistulae Infection Distribution	Group A	Group B
No wound infection	18	19
Wound infection	2	2

Total	20	21
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Only 4.4 % in 1<sup>st</sup> group had developed wound infection with early removal of catheter but 32.2 % wound infection had been developed in 2<sup>nd</sup> group postoperatively. It was observed along with statistically significant difference as p value was equal to 0.012 as shown in table-5.

#### DISCUSSION:

Hypospadias repair procedure has the major aim to produce a functional neourethra along with aesthetically normal penis. During present times, in hypospadias cases the (TIP) technique is mostly preferred by a growing number of supporters [5]. In bigger hypospadias, the fistula rate is observed to change from 0 to 33 %. Meatal stenosis, failure and fistula have been observed as the more general complications seen during study and they are more likely to be produced during the six months postoperatively. The most current hypospadias repairs indicate lesser number of complications even then fistula formation is still observed as a significant issue [6]. To minimize the rate of urethra cutaneous fistula formation, number of changes in (TIP) procedure are being carried out but not even a single surgical method can be decided as a standard for stopping the formation of fistula [7]. Early removal of urethral stent clearly minimized the chance of having urethra cutaneous fistula in our research. It was followed by Snodgrass repair as observed in 1<sup>st</sup> group in which only 4.4 % has such complications in contrast with 2<sup>nd</sup> group in which one third have developed fistula [8]. The former observed just two out of 41 patients which had gone through stent free (TIP) surgery had fistula. But the latter made contrast of two groups in which Snodgrass repair was used. He observed that those along with only suprapubic drainage and stent-free had lower fistula repair as just 7.1 % compared to the 2<sup>nd</sup> group which was dependent upon urethral catheterization as 14.2 %. An observation made, was that fistula developed in just 1.5 % out of sixty-six patients in which urethral stent was removed early during two to three days postoperatively [9].

Although no important difference in different timings of stent removal was observed by Ritch, he favoured that (TIP) hypospadias repair might have urethral catheter taken off securely on 1<sup>st</sup> day postoperatively [10]. There was clear difference regarding the development of meatal stenosis among early removal of urethral catheter during two to three days (0 %) in a research performed by Radwan and the patients who had a lengthy period of urethral catheterization i.e., 12.7 % (18). This type of outcomes was near to those findings seen in the study in which 11.1 % of group A and 36.5 % of group B had meatal stenosis [11].

No clear difference was found by Xu in the time duration of urethral stent as any effect of stenosis development. He observed in the research of 254 patients having mid-shaft hypospadias and primary distal who have gone through (TIP) repair and also, they were judged retrospectively. He came to the result that non-catheter (TIP) repair is possible easily and +ve outcomes can be gained along with lesser patient discomfort and minimum complications [12]. According to our research, early stent removal has largely minimized the danger of wound infection in which 93.3 % group were free from any infection. The same was also found by Almodhen and Demirbilek during a prospective observational research in which 21 consecutives non-toilet trained boys were involved [13]. The complications of postoperative period had also been minimized in non-stented Mathieu hypospadias repair. In a prospective research, it was very much clear in which 36 patients were compared who were undergoing Mathieu repair along with catheter i.e. n=17 and mean age was 4.1 years in contrast to those without diversion i.e. n=19 and mean age was 4.6 years [14]. There was no complain by patients regarding bladder distension, significant pain and urinary extravasation in both the groups. We can explain it by the presence of suprapubic diversion in all our patients. Moreover, it was confirmed by the results observed by Radwan.

#### CONCLUSION:

For all cases of penile hypospadias, tabularized incised plate i.e. T.I.P repair is a versatile operation that can be employed. Early stent removal, after one day of surgery for hypospadias repair simplifies care after operation. It also greatly minimizes the danger of development of wound infection, meatal stenosis and urethra-cutaneous fistula. It also avoids the requirement of antibiotics.

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