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Using preputial mucous to cover neourethra in TIP urethroplasty: 4 years experience in a tertiary paediatric hospital of Bangladesh

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Background. Hypospadias has a wide spectrum of penile abnormality requiring surgical correction. Most of the cases are of anterior variety and the surgical technique depends on constructing a neo urethra. Snodgrass or Tubularized Incised Plate (TIP) urethroplasty is one of the most popular techniques of urethroplasty which depends on the existing healthy, adequate and intact urethral plate. Different tissues have been described to cover the neourethra as second layer in literature. In this study we modified the TIP urethroplasty by covering the neourethra with 2 layers of pedicled prepuccial mucosa or Dartos flap.

Objective. To see the outcome of modified Snodgrass or TIP urethroplasty in anterior mid and proximal penile hypospadias.

Materials and method. Total 88 patients were operated by modified Snodgrass technique or modified TIP urethroplasty from January 2012 to July 2016. Coronal, subcoronal, distal penile, mid penile and proximal penile hypospadias were included in the study. Every patient underwent modified TIP urethroplasty and outcomes were assessed.

Results. The mean age of the patients were 28.34±14.98 months, ranges from 6.5 to 65 months. 9 (10.2%) patients of our series develop urethrocuteaneous fistula, 5 (5.68%) patients develop meatal stenosis and 1 (1.1%) patient developed neourethral stricture.

Conclusion. TIP urethroplasty is a versatile method to correct penile hypospadias. Covering of the neourethra with prepuccial mucosa secure the neourethral anastomosis. The author declares that there is no conflict of interest.

Key words: Hypospadias, TIP urethroplasty, Prepuccial mucosa.
Introduction

Hypospadias may be defined as an arrest in normal development of urethra foreskin, and ventral surface of penis [1]. It occurs in 1 in 125 live male births [2,3]. This results in a wide range of abnormalities where the urethral opening is situated anywhere along the ventral shaft of the penis from glans penis to perineum. Most of the cases are distal or anterior variety with an incidence of 75% [4]. Objectives of hypospadias surgery are orthoplasty (Penile straightening), urethroplasty, meataloplasty and glanduloplasty; scrotoplasty and skin coverage [1]. Excellent cosmetic appearance and voiding straight forward in standing position from the tip of the glans determines the success of the operation [1,4]. More than 300 procedures has been described in literature [5] with a lot of modifications.

Warren T. Snodgrass in 1994 described a newer procedure for hypospadias repair with combination of longitudinally incised the urethral plate and tubularized it around a soft silicone catheter [7]. Snodgrass urethroplasty has become the method of choice day by day worldwide to treat distal hypospadias [6].

Constructing neourethra is the most difficult part of Snodgrass method. Striking complication of Snodgrass or TIP urethroplasty is urethrocutaneous fistula. As there is a little amount of tissue is available for reconstruction, so covering the neourethra is still a matter of concern. Hence we thought that covering the neourethra with separated prepuclial mucosa like ventral parking of the skin might reduce the formation of urethrocutaneous fistula.

Objective. To see the outcome of modified Snodgrass or TIP urethroplasty in anterior mid and proximal penile hypospadias.

Materials and Methods

It was an observational study conducted in the division of paediatric surgery, Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh. We have operated 88 patient from January 2012 to July 2016. Patients aged from 6 months to 10 years were included in the study. Urethrocutaneous fistula formation, Neo urethral stricture, operation time, Post operative mental stenosis were taken as outcome variables.

This study was approved by the ethical committee of Dhaka Shishu (Children) Hospital. More over prior to operation parents were briefed about the procedure and probable complication to obtain informed consent.

All the patients were operated under caudal block. Prepuclial skin was released from the glans. Incision lines were outlined and marked with sterile marker. A suitable sized silicon BMI feeding tube 6 to 8 Fr was introduced through the hypospadiac opening. A ‘U’ shaped incision is made extending along the edges of the urethral plate from the tip of the glans to 2–3 mm proximal to hypospadiac meatus. A circumferential incision 5–7 mm proximal to the coronal margin is extended from each edge of urethral plate and the penile shaft. Penile skin was degloved up to the base of the penis to correct chordee. An artificial erection test is performed. If chordee still present then corrected by...
Results were compiled and presented with tables 1, 2. Statistical analysis was done by SPSS 20 version. Chi square test was done for qualitative data. Quantitative variables were expressed as mean ± SD.

### Discussion

This prospective observational study was conducted under division of Paediatric Surgery, Dhaka Shishu (Children) Hospital, Dhaka, Bangladesh from January 2012 to December 2017. Total 88 patients were operated by modified Snodgrass or TIP method and outcomes were observed.

Since its first description in 1994 by Warren T. Snodgrass, TIP urethroplasty becomes the most popular technique for repair of primary hypospadias [8–10]. The key factor in TIP urethroplasty is the midline incision of urethral plate to widen the urethral plate for tubularization in a tension free manner.

As several study showed most common complication of TIP urethroplasty were urethrocuteaneous fistula, mental stenosis [11], so we focused on this two complication with another important complication that is post operative persistent chordee.

In our study 9 patients (10.2%) developed urethrocuteaneous fistula among 88 patients. Several study showed that rate of urethrocuteaneous fistula varies from 0 to 10%. In our series the rate of urethrocuteaneous fistula is same as other reported studies [6–11]. In his review
study in 2005 W.T. Snodgrass used prepucial mucous flap to cover the neourethra as like button hole technique [12] but we used to cover neourethra by prepucial mucous flap as like ventral parking of the skin one over another. It created 2 layers of covering over neourethra. Though it does not reduces the urethrocutaneous fistula significantly but we think that this prepucial mucous flap ensure protection of the neourethral suture line. Anjan Kumar et al. 2012 showed less fistula rate in tunica flap compared with dartos flap but it was statistically non significant [18].

Meatal stenosis was the area of attention after urethrocutaneous fistula as there is dilemma about dilatation [13–17]. None of our cases were under regular dilatation. Patients were asked to follow up on 15th POD to check meatal size. If needed we calibrated the neomeatus with nozzle of ophthalmologic ointment. 5 patients (5.68%) in our series developed meatal stenosis. This result is as similar as other reported studies [6–11].

We had post operative neo urethral stricture in 1 patient (1.1%). It was managed by multiple dilatation followed by optical internal urethrotomy. Rate of post operative stricture in our study is near similar in comparison to other studies.

Conclusion
Prepucial mucous or penile dartos can be a good alternative of tunica vaginalis flap to cover neourethra as it is easy to harvest and scrotum remains untouched.

References/Literature

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