



## The Optimal Technique in Repairing Middle Type Hypospadias in Maharaj Nakorn Chiangmai Hospital.

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### Abstract

**Objectives:** To compare the results of Middle Type Hypospadias repair by Tubularized incised plate (TIP) and Transverse preputial island flap (TPIF) in Maharaj Nakorn Chiangmai Hospital.

**Methods:** Retrospective chart reviewed from 2003 to 2008, 80 patients who underwent middle hypospadias repair were evaluated. Thirty-six patients (45%), underwent Tubularized incised plate urethroplasty (TIP) and 44 patients (55%), underwent Transverse preputial island flap urethroplasty (TPIF). The success rates were compared according to the surgical technique, age, presence of chordee and catheter time.

**Results:** The presence of chordee was found in 36 patients (45%). The success rates of TIP and TPIF were 45.10% and 45.90% respectively,  $P=1.000$ . No statistically significant difference was found in patient age, the presence or absence of chordee, catheter time and overall complication. The operative time was statistically significant difference in between both techniques (TIP Mean  $2.44\pm0.10$  hrs and TPIF Mean  $3.05\pm0.12$  hrs,  $P=0.0001$ ).

**Conclusion:** The success rate of middle type hypospadias repair showed no difference in TIP and TPIF technique. But the operative time for TPIF was longer than TIP urethroplasty.

**Key word:** Middle Hypospadias, Tabularized incised plate (TIP), Transverse preputial island flap repair (TPIF)

## Introduction

Hypospadias is a relatively common congenital defect of the male external genitalia. It is present in approximately 1 in 250 male newborns. Hypospadias is defined as an ectopic urethral meatus[1,2], and is also defined as an association of three anomalies of the penis: (1) an abnormal ventral opening of the urethral meatus, (2) an abnormal ventral curvature of the penis (chordee) and (3) an abnormal distribution of foreskin. In all commonly used classification of hypospadias were anterior/distal, middle and posterior/proximal. The most common findings for hypospadias in Maharaj Nakorn Chiangmai Hospital were middle hypospadias.

Although in the past, different techniques were used for middle hypospadias.[3,4,6-9] The aim of most techniques was to restore the penis to near-normal conditions in terms of function and cosmesis. We also performed two most surgical techniques for middle hypospadias repairs.

Therefore, our aim was to evaluate the factors affecting successful results, as well as the success of the technique, by using retrospectively investigating cases of middle hypospadias that had undergone Tubularized incised plate (TIP) urethroplasty or Transverse preputial island flap (TPIF) urethroplasty and comparing the outcomes of these procedures.

## Material and method

The records of 86 patients with middle hypospadias (distal penile, midshaft, proximal penile) who

had undergone surgery at Maharaj Nakorn Chiangmai Hospital from 2003 to 2008 were retrospectively evaluated. Of these patients, 36 (mean age 3 years, SD 3) underwent TIP and 44 (mean age 4 years, SD 3) underwent the TPIF technique. The TIP and TPIF methods were performed as previously described (Table 1).

Hypospadias was repaired under general anesthesia. A penile tourniquet was maintained during surgery. Chordee was identified by artificial erection. The chordee usually disappeared after the penis was degloved.

In all cases, 6-0 polydioxanone absorbable suture was used in the formation of the neourethra, and antibiotic treatment (Cefazolin 50 MKD. Divided 3 dose) was given preoperatively and postoperative until removal of the catheter. A catheter was removed on the seventh postoperative day or a catheter was removed on the 14<sup>th</sup> postoperative day depend on surgeon preference. Patients whose catheter were removed were discharged from hospital after free urination was observed.

The last evaluation of the patients was done 1 year after surgery. The success rates were compared according to the surgical technique used, patient age, presence of chordee, and catheter time. The criteria for success were in terms of function, cosmesis and no requirement for reoperation.

Statistical analysis was done by Chi-square test analysis of Categorical data and Student's t-test using for Contineous data.

**Table 1** Patient characteristics stratified by surgical technique

Characteristics	Tubularized incised plate (TIP) (n=36)	Transverse preputial island flap (TPIF) (n=44)	P Value
Age (yr) [Mean(SD)]	3.75±3.14	4.70±3.65	0.219
Chordee(n)	15 (41.67%)	21 (47.73%)	0.655

$P <0.05$  was considered to indicate statistical significance.

## Results

Of the 80 patients included into this study, TIP repair was used for 36 patients and TPIF for 44 patients. All patients were compared with respect to patient age, presence of chordee. Mean age  $3.75 \pm 3.14$  years underwent and Mean age  $4.70 \pm 3.65$  years underwent [ $P$  Value=0.219]. The presence of chordee was found 36 patients (45%). 15 patients (41.67%) in 21 patients (47.73%) in TPIF [ $P$  value=0.655]. Statistically, the groups had similar characteristics (Table 1).

Comparing the succession of the different technique of TIP versus TPIF the success of TIP was 45.10% where as TPIF was 45.90% [ $P$  value=1.000] revealed no statistically significant was observed.

No difference was observed when operational success was compared in terms of patient age (mean $\pm$ SD) or the presence or absence of chordee or catheter time (Table 2).

We found statistically significant differences in operative time between TIP Mean  $2.44 \pm 0.10$  hrs and TPIF Mean  $3.05 \pm 0.12$  hrs. [ $P$  value =0.0001] (Table 3).

No significant difference in overall complication between TIP 14 patients (38.89%) and TPIF 19 patients (41.25%) [ $P$  value =0.820]. We found statistically significant difference in urethral stricture complication, no urethral stricture in TIP but in TPIF urethral stricture occurred in 11.36% [ $P$  value =0.048] (Table 4).

## Discussion

Numerous successful procedures have been described for the repair of middle hypospadias, the commonly used techniques are the Mathieu, the onlay island flap, TIP and TPIF.[1,2] Complication rates of 1-5% have been reported for primary hypospadias repair with the TIP urethroplasty technique.[1,3,4,5] The TIP described by Snodgrass et al. Reported a complication rate of 11%. The TPIF[8,9] described and named by Duckett (1980) is often referred to the “Duckett tube” and is performed one-stage

**Table 2** Comparison of factors affecting success of middle hypospadias repairs

Factor	Success	Failure	P Value
	(n=51)	(n=29)	
Surgical technique [Mean(SD)]			1.000
Tubularized incised plate (TIP)	23 (45.10%)	13 (44.83%)	
Transverse preputial island flap (TPIF)	28 (54.90%)	16 (55.17%)	
Age (TIP+TPIF)	$4.52 \pm 0.49$	$3.82 \pm 0.60$	0.384
Chordee(TIP+TPIF)(%)			0.361
Yes	25 (49.02%)	26 (50.98%)	
No	11 (37.93%)	18 (62.07%)	
Catheter time [Mean(SD)]			1.000
7 days (n=13)	8 (15.69%)	5 (17.24%)	
>7 days (n=67)	43 (84.31%)	24 (82.76%)	

**Table 3** Comparison between Tubularized incised plate (TIP) and Transverse preputial island flap (TPIF)

Factor	TIP	TPIF	P Value
	(n=36)	(n=44)	
Success(%)	23 (45.10%)	28 (54.90%)	1.000
Failure (%)	13 (44.83%)	16 (55.17%)	
Operative time (Mean±SD)	2.44±0.10	3.05±0.12	0.0001**
Complication [Mean(SD)]			0.820
Presence	14 (38.89%)	19 (41.25%)	
Absence	22 (61.11%)	25 (56.82%)	

\*\* P Value &lt;0.001 \* P Value &lt;0.05

**Table 4** Complication rate per technique used

Complication	TIP	TPIF	P Value
Overall Complication(%)	14 (38%)	19 (43%)	0.802
Wound Dehiscen(%)	2 (5%)	2 (4%)	0.845
Flap Necrosis(%)	4 (11%)	11 (25%)	0.187
Meatal Sternosis(%)	3 (8%)	2 (4%)	0.514
Urethral Stricture(%)	0	5 (11.36%)	0.048*
Fistula(%)	11 (30%)	10 (22%)	0.546

\*\* P Value &lt;0.001 \* P Value &lt;0.05

tabularized repair for proximal hypospadias. Overall complication rate 36% and fistula 17%.[11,12]

In our study, The success rate in the TIP group and the TPIF group were 45.1% and 54.9% respectively. The success rate between the two techniques were not difference. Overall complication rate of both techniques were not different, urethral stricture occurred in 5 TPIF repair (11.36%) and no urethral stricture occurred with TIP repair. Because of TPIF had anastomosis between native urethra and neourethra. We found that the operative time of TPIF was longer than TIP. Because of TIP is a versatile repair this is the season of widespread use. TIP can

be applied to a wide range of defect encompassing most distal and many proximal cases, it is not only easily learning but also easily applied technique.

Another source of controversy in hypospadias repair is the use or omission of postoperative urethral catheterization. Mc Cormack and Colleagues(1993) found no difference in outcome with or without urinary diversion and indwelling urethral catheter.[13] Snodgrass w. left stents distal repairs for 5 to 7 days and proximal repair for 10 to 17 days[3,4]. WE left stent 7-14 days. We found urethrocutaneous fistula in 1 boy, when prolonged stenting the fistula was disappear.

Today, the best time for the patient is prior to 1 years old, because this increase the success rate of the operation and minimizes the psychological effects on child.[14] Some authors reported that complication increased with increasing age.[15] In our study, we had done the hypospadias repair in late children for many years. From our study the complication occurred in many cases which differed from the others. Therefore we now change to do in younger patients.

## Conclusion

The use of TIP or TPIF technique in the repair of middle hypospadias, patient age, the presence of chordee and catheter time did not affect the success of the surgery. But TPIF was used longer operative time than TIP. We believe that the TIP technique should be preferred, because of short operative time, more over it is an easily learning and also easily applied technique.

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