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Cosmetic outcome of tubularized incised plate depends on the type of hypospadias: a case control study



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ABSTRACT

Background: Recent studies show Tubularized Incised Plate (TIP) urethroplasty, commonly used for distal hypospadias repair, can be used in proximal hypospadias with a decent success rate. It was contented that the age of the patient and the type of hypospadias when underwent the surgery influences the outcome. One the objectives of hypospadias repair is the cosmetic outcome, which can be evaluated using Hypospadias Objective Penile Evaluation (HOPE) questionnaire. Our objective was to compare the age group and the hypospadias type based on the cosmetic surgical outcome.

Methods: In Sanglah General Hospital, Denpasar, 38 patients who had undergone a TIP urethroplasty from January 2012 until December 2015 were evaluated using HOPE questionnaire.

Results: The sample were consecutively recruited into two equally-numbered groups based on the HOPE total score. The median of the

age of the subjects when they undergone the surgery was 4.8 years (1.89-18.10). The proportion of the over 5 year-old in the cosmetically unsatisfying group (case) was the same as the proportion in the cosmetically satisfying group (control), 52.63%, EOR=1 ($p>0.05$). The proportion based on the year of surgery were different, but not statistically significant ($p>0.05$). Based on the type of hypospadias, the proportion of subjects with proximal hypospadias in the case group was more than in the control group, EOR=14.95 ($p<0.05$). It showed proximal hypospadias a risk factor for cosmetically unsatisfying result post TIP.

Conclusions: It should be taken into account that TIP in proximal hypospadias has a greater risk to produce an unsatisfying cosmetic result.

Keywords: Proximal hypospadias, urethroplasty, Tubularized Incised Plate, Hypospadias Objective Penile Evaluation.

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INTRODUCTION

Hypospadias is a congenital abnormality in penis in which the urethral meatus found on the ventral of penile shaft, often accompanied with dorsal winged prepuce, and ventral penile shaft deviation.¹ It is the most common congenital abnormality, found in 1 of 200-300 male live births.²⁻⁵ In Sanglah Hospital, from 108 hypospadias patients, 37.9% penoscrotal (n=41); 28.7% penile (n=31); 11.1% coronal (n=13); 7.4% scrotal(n=8); 7.4% subcoronal (n=8); and 5.5% perineal (n=6).⁶

There is not a repair method claimed as the gold standard for every type of hypospadias.^{7,8} In distal hypospadias, techniques mostly used are Meatal Advancement and Glanuloplasty (MAG), Tubularized Incised Plate (TIP), perimeatal-based flap, and on lay island flap. Meanwhile, for proximal, one-step repair such as Koyanagi or perimeatal foreskin flap, or the two-step repair can be used.¹ Recent studies reveal that TIP is also doable for proximal hypospadias repair.¹ Studies showed that lower rate of complication can be achieved if the repair is done in the early age.⁹ However, the complication is influenced by many factors, such

as the surgeon experience, post-surgery infection, type of hypospadias, the patient nutritional status.¹⁰

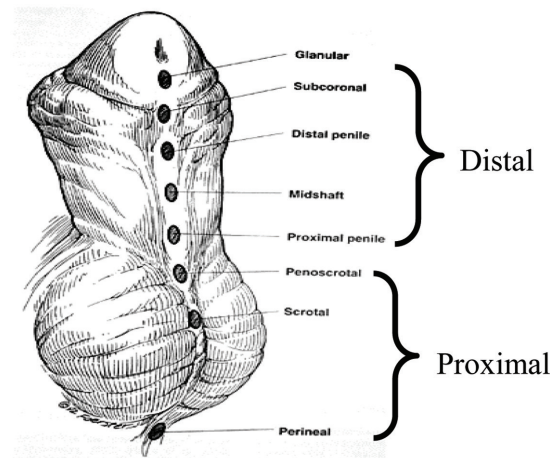
Fertility and cosmetics are the main objectives of hypospadias repair. Hypospadias Objective Penile Evaluation (HOPE) is a scoring system to evaluate the cosmetic outcome of hypospadias repair.¹¹ The HOPE questionnaire evaluates 5 features: skin shape, meatus position, meatus shape, glans shape, and torsion, each feature is scored from 0 to 10.

SUBJECTS AND METHODS

We conducted a case control study. The inclusion criteria were: a parental agreement to include his/her child in this research, the patient's age was between 1 to 20 years old when the study was conducted, and the patient underwent the TIP for at least 3 months before he underwent the cosmetic examination using HOPE questionnaires. Patients with incomplete medical records and post-surgical infections were excluded. From 1 January 2009 to 31 December 2015, 108 patients were registered as hypospadias patients who underwent urethroplasty in Sanglah Hospital. From 108 patients, only 84 used TIP technique. In addition, from the 84,

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as many as 26 patients had incomplete medical records. All of them underwent the surgery from 2009 to 2011. As a result, the number of the eligible



questionnaire. A patient was consecutively assigned to a group until 19 subjects per group was reached. The patient was assigned to the cosmetically unsatisfying group (case) when the total HOPE score less than or the same as 45, and to the cosmetically satisfying group (control) if more than 45. The date of birth and the date of surgery were recorded from the patient's medical record.

The distribution of the sample was tested using Shapiro-Wilk. Because the number of sample was less than 50, the results were assessed using Fisher Exact test to point out any differences between the two groups for the age when undergone TIP, year of surgery, and type of hypospadias, $\alpha=0.05$.

RESULTS

The evaluated feature that scored the least was penis skin shape, followed by meatus position. The highest score was for the glans shape, followed by torsion.

The sample consisted of 44% distal hypospadias (n=17) and 55.27% proximal hypospadias (n=21). The Shapiro-Wilk test on the age result was $p<0.05$, showing the data was not normally distributed. Therefore, we use the median and the IQR to describe the characteristics of our sample. The median of the age of the subjects when they underwent the surgery was 4.8 years (min-max 1.89-18.10). The median of age in the cosmetically satisfying group was 5.129 (IQR 7.22, min-max 1.89-18.10). The median of age in the cosmetically unsatisfying group was 5.036 (IQR 2.83, min-max 2.15-12.26).

The proportion of the over 5-year-old in the case group was exactly the same as the proportion in the control group, 52.63%, EOR=1 ($p>0.05$). It showed that the age when undergone the surgery did not influence or independent from the cosmetic result of TIP. There was a not significant difference of the case and control group proportions based on the year of surgery ($p>0.05$). Thus, the year of surgery did not the cosmetic result of TIP. However, there was a significant difference of the case and control proportions based on the type of hypospadias ($p<0.05$), EOR=14.93. The result showed the cosmetic outcome was influenced by the type of hypospadias. In a group of TIP patients with a total score of HOPE under or the same as 45, there was a 14.93 fold of chance that they had a proximal hypospadias before they underwent the surgery.

DISCUSSION

The median of age when underwent the surgery in our sample (4.8 years) was much older than in

Table 1 The Total Score of HOPE Based on The Type of Hypospadias

		Type of Hypospadias		Total
		Distal	Proximal	
HOPE Features	Skin Shape	146	129	275
	Meatus Position	146	174	320
	Meatus Shape	164	207	371
	Glans Shape	170	210	380
	Torsion	167	207	374

Table 2 The Sample Characteristics

Characteristic	Group		Total
	Control n=19 f (%)	Case n=19 f (%)	
Age			
Median ± IQR	5.129 ± 7.22	5.036 ± 2.83	4.8
min-max	1.89-18.10	2.15-12.26	1.89-12.26
Type of Hypospadias			
Distal			17 (44.73)
Proximal			21 (55.27)

patients was 58 patients, all of them underwent TIP by one surgeon from January 2012 until December 2015. They were contacted by phone to visit and to have their surgery outcome evaluated in our hospital during November 2015 to March 2016.

The patient's genital was photographed, and was given scores by a resident of the Department of Surgery, by comparing the pictures to a HOPE

Table 3 Bivariate Analysis of Age, Year of Surgery, and Type of Hypospadias as Risk Factors of Cosmetic Result Based on HOPE

Risk Factor	Group		EOR	p value
	Control	Case		
	n=19 f	n=19 f		
Age				
<=5yo	9	9	1	0.515
>5yo	10	10		
Year of Surgery				
2012-13	7	10	0.525	1
2014-15	12	9		
Type of Hypospadias				
Distal	14	3	14.93	0.001
Proximal	5	16		

other studies, such as a study by Samuel and Wilcox conducted in the UK in 2003, which mean of age was 14.1 months.¹² Because the size of the penis of Asian children are smaller than the Caucasians, the optimal age for hypospadias repair is older in Asians.¹³

Does not requiring a flap is TIP superiority compared to other techniques. It should be noted that a flap can cause a torsion.¹ Thus, TIP excellence was confirmed by our result that the cosmetic feature scored second highest was torsion.

Our study found there was no difference when patient undertook the surgery as young as 5 years old compared to older than 5, and no significant difference based on the year of surgery. However, our study showed a significant difference between the two groups based on the type of hypospadias. But, we had not found any study evaluating the cosmetic outcome using HOPE, comparable to ours. A study by Samuel and Wilcox only mention a good cosmetic outcome in general.¹² The study involved 83 patients, composed of 65 distal and 18 proximal hypospadias, mean age 14.1 months (SD 7.8 months). It reported a not significant difference in the proportion of post TIP surgery complication in both type of hypospadias. Another study by Snodgrass and Yucel in 2007 reported in 30 distal and 35 proximal hypospadias, where the number of post TIP surgery complication was significantly higher in the distal (53% vs 25%, $p=0.04$).¹⁴

Our study revealed that even though TIP can be done in any type of hypospadias, it may have a higher risk to produce a cosmetically unsatisfying penis. However, our study limitation was the small number of sample due to too many incomplete or missing medical records of the patients who underwent a TIP surgery in 2009 to 2011.

CONCLUSION

This study demonstrated the cosmetically unsatisfying outcome of hypospadias repairs using TIP was associated with proximal hypospadias.

The study was presented in The 9th Malang Continuing Urology Education, "Pediatric Urology", and was awarded as the best unmoderated poster

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