

Paediatric penile perception score (PPPS) in hypospadias repair

Syed Adeel Ahmed, Syed Zafar Zaidi

Abstract

The present cross-sectional study sought to evaluate the Paediatric Penile Perception Score (PPPS) as a tool to assess parental perception of hypospadias repair in children. In all, 60 patients were enrolled in the study with median age of 3.9 years; of these 24 (40%) had proximal hypospadias and 36 (60%) had distal hypospadias. After hypospadias repair, parents/guardians were interviewed about meatus, glans, skin, and general appearance using a standardised questionnaire to report penile appearance and penile perception. Overall, the median PPPS score was 17 (IQR: 16-18) with no significant difference in the penile perception score between the type of hypospadias, relationship of the person interviewed with the child (mother, father or other), nor the children's age. The study revealed that penile perception score (PPPS) is a valuable tool that can be used to assess parental penile perception regarding the child's penile appearance and noted overall high satisfaction after hypospadias repair.

Keywords: Hypospadias, Paediatric penile perception score (PPPS).

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Introduction

Hypospadias is a common innate urologic disorder with a worldwide prevalence of 0.3%-0.4%¹ It is a composite of three anatomic defects: a dorsally 'hooded' foreskin, ventral chordee, and an abnormal ventrally placed urethral meatus.² Hypospadias is often seen in affiliation with other urogenital anomalies and may have a frequency of approximately 7% in familial settings, whereas the heredity of hypospadias was reported to be around 57%-77%. In majority of hypospadias patients, multifactorial aetiology, including both natural and hereditary components, has been noted. Essentially, hypospadias is the result of a defect in the production or metabolism of foetal androgens; it can also be due to a deficiency of androgen receptors. During foetal development, this results in an incomplete closure of the urethral folds on the under surface of the penis.³

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Department of Urology, The Indus Hospital and Health Network, Karachi, Pakistan.

Correspondence: Syed Adeel Ahmed. Email: adeel_doct@hotmail.com

Over 150 years, around 300 surgical procedures have been discovered to treat hypospadias. These surgical procedures were straightforward and performed in a single fundamental step to diminish complications and give great cosmetic appearance.⁴ Almost all forms of hypospadias (proximal to distal) require surgical correction. Across the board, the goals of all these techniques are the same — to create a cosmetically acceptable penis sans curvature with a slit-like meatus at the tip of the penis.⁵ Surgical correction enables not only good cosmesis, but also unhindered sexual function and a chance at normal voiding.⁶

As the child grows, his insight about sexual development is largely influenced by the parents and how they perceive the genital appearance of their child. This cause-effect relationship can have a significant impact on the psychosocial well-being and overall quality of life of these affected children.⁷ Not much data is available on how the parents perceive the cosmetic outcome of the hypospadias surgery compared with the views of the paediatric urologists, utilising validated and objective scoring system.⁸

In the past, much research has been done to look at the short-term outcomes of hypospadias repair. However, there is a paucity of literature evaluating the effect of hypospadias surgery on the psycho-social aspects associated with diagnosis and management of this complex condition. In the aftermath of surgery, the general appearance of the penis — as trivial as it may sound — has long-term consequences. It affects not only the psychological growth of the child himself, but also has an influence on the perception of the parents, whose satisfaction with the surgical outcome is of utmost importance. Despite a myriad of surgical procedures for hypospadias repair, there are only a few systems to measure the outcome of the procedures.

Multiple scores have been designed as a tool to assess the level of satisfaction regarding penile appearance, including Paediatric Penile Perception Score (PPPS), HOPE, HOSE, IIEF-5 score (International Index of Erectile Function), and Genital Penile Perception Score (GPPS).⁹⁻¹³ Most of these scoring systems are reliable in evaluating a certain "aspect" of surgery. Hypospadias is a complex condition to treat, and requires a holistic approach in

which all the surgical, sexual, cosmetic, and psycho-social aspects need to be fully addressed. It has been established that surgical correction after adolescence is not much satisfying and may bear a psychological effect on the patient.¹⁴ A validated scoring system would grant us the ability to compare the results between different studies. The paediatric penile perception score is validated for paediatric population and it is appropriate for assessment of cosmetic outcomes perceived by the parents, patients and surgeons and it is exceptionally simple to manage unlike the other systems.

Patients and Methods

This study was carried out at the outpatient clinic of the Department of Urology at The Indus Hospital, Karachi (TIH). A cross-sectional study was conducted using consecutive non-probability sampling technique after calculating sample size by WHO software¹⁵ having assumptions of confidence interval 95% and absolute precision 0.01, but the study target was made for 60 male children, aged between 1 and 15 years, who underwent hypospadias repair surgery. The study was conducted after obtaining IRB approval from May 2018 to Nov 2019.

All the patients had a primary diagnosis of hypospadias and underwent hypospadias repair surgery. The children's parents provided informed and written consent for participation in the study. Patients who were not operated at The Indus Hospital and those who required a redo hypospadias surgery or had incomplete records were excluded from the study. The participants were divided into two groups according to the type of hypospadias of their child-Proximal or Distal. After hypospadias repair, the patients' parents were interviewed according to a standardised questionnaire and the PPPS was determined. The PPPS is designed to assess penile perception about the meatus, glans, skin, and general penile appearance after surgery. The questionnaire consists of four parts: (a) satisfaction about the shape and position of the urethral meatus, (b)

satisfaction about the penile glans appearance, (c) satisfaction about the penile skin appearance, and (d) satisfaction about the overall penile appearance.¹⁶

These categories were graded from very satisfied-holding the highest score of 3; satisfied — score of 2; dissatisfied — score of 1; very dissatisfied — score 0. Scoring was done using visual analogue scale (Table). The sum of these scores was then used to generate an overall score. Data was analysed using SPSS version 21.0. Mean \pm Standard deviation was calculated for age, penile length, and paediatric penile perception score (PPPS). Frequency and percentage was computed for the type of hypospadias and relationship of the person interviewed with the child. Independent T-test was applied to assess the mean difference in PPPS between the types of hypospadias. Other effect modifiers were controlled through stratification of age, type of hypospadias and relationship with the child. Post stratification T-test was applied to see the influence of these confounding factors on the PPPS score. P value < 0.05 was considered to be statistically significant.

Results

Recent progress and development in hypospadias repair surgery allows achievement of good cosmetic results, unhindered sexual function and a normal micturition in patients even with proximal hypospadias. However, there is no perfect result and patients have to deal with minor cosmetic deficiencies, like scars.

In this study, a total of 60 patients were enrolled. Of these, 24 (40%) had proximal hypospadias and 36 (60%) had distal hypospadias. Median age of the patients at the time of surgery was 3.9 years with no significant difference in median ages among the types of hypospadias ($p = 0.728$). Overall the median PPPS score was 17 (IQR: 16-18) with no significant difference in the penile perception score between all types of hypospadias ($p = 0.705$). The study population was stratified according to age

Table: Paediatric penile perception score with level of satisfaction.

Variables	Level of satisfaction (N)				Total
	 Very satisfied (3)	 Satisfied (2)	 Dissatisfied (1)	 Very dissatisfied (0)	
Penile length	41	17	2	0	60
Position and shape of meatus	48	11	1	0	60
Shape of glans	54	6	0	0	60
Shape of penile skin	49	10	1	0	60
Penile axis	50	10	0	0	60
General appearance of the penis	50	10	0	0	60

(< 4 or > 4 years), and the p-value for both the age groups was not significant (p= 0.623 and p= 0.952, respectively). Moreover, no significant difference in median PPPS score was observed between the relationship of the person interviewed and the child (mother, father or other guardians) (p=0.983). It was concluded that it is important to ascertain parental satisfaction after hypospadias surgery, using the PPPS scoring system. The results of hypospadias surgery and their acceptance by the parents are very encouraging at our institution. The study recommends utility of PPPS to assess penile perception among the parents of children undergoing hypospadias surgery giving them opportunity to express their views while standardising reporting of results.

Conclusion

The study revealed that the use of PPPS to assess the parents' overall satisfaction after hypospadias was very satisfactory. So, based upon the results of this study and the studies done before, it is strongly recommended that paediatric penile perception score (PPPS) be used as a tool to assess penile perception of the patients' parents regarding the appearance of the penis of their child and to assess their level of satisfaction.

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Conflict of Interest: None to declare

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