# EVALUATION OF COSMETIC AND SATISFACTION RATE AFTER URETHROPLASTY PROCEDURE USING PPPS

**[1]Edhi Hapsari, [1]Irfan Wahyudi, [1]Arry Rodjani.**

[1]Department of Urology, Faculty of Medicine/Indonesia University, Cipto Mangunkusumo Hospital, Jakarta.

***ABSTRAK***

***Tujuan Penelitian:*** *Untuk mengevaluasi tingkat kepuasan pasien atau orang tua pasien hipospadia pasca uretroplasti terhadap hasil kosmetis akhir dari operasi tersebut.* ***Bahan & Cara:*** *Kami mengumpulkan secara prospektif orang tua dari pasien hipospadia yang menjalani operasi di RSUPN Cipto Mangunkusumo sejak awal 2001 hingga pertengahan tahun 2009 dan berusia di bawah 18 tahun. Data dasar yang diambil ialah usia, usia pertama dan terakhir kali operasi, tipe hipospadia, karateristik dari hipospadia, teknik yang dipakai untuk uretroplasti, dan waktu operasi. Kami menanyakan kuesioner berupa latar belakang orang tua pasien dan empat pertanyaan penilaian untuk Pediatric Penile Perception Score (PPPS). Aspek yang ditanyakan adalah (1) kepuasan terhadap bentuk dan letak meatus, (2) kepuasan terhadap bentuk glans penis, (3) kepuasan terhadap bentuk kulit penis, dan (4) kepuasan terhadap bentuk keseluruhan dari penis (appearance). Setiap pertanyaan mempunyai 4 nilai jawaban yaitu 3 sangat puas, 2 puas, 1 tidak puas, dan 0 sangat tidak puas. Untuk analisa data, digunakan uji statistik Kruskal Wallis dan Mann Whitney untuk melihat adanya korelasi antara latar belakang orang tua, tipe hipospadia, dan tipe operasi yang dilakukan terhadap PPPS.* ***Hasil Penelitian:*** *Dari total 178 pasien, kami dapat menghubungi 76 orang pasien dengan rerata usia saat operasi pertama kali 5,67 ± 3,66. Skor PPPS rerata skor meatal adalah 1,88 ± 0,46, rerata skor glans 2,02 ± 0,32, rerata skor kulit 1,95 ± 0,39, rerata skor bentuk keseluruhan 1,89 ± 0,45 dan rerata jumlah PPPS 7,75 ± 1,31. Total jumlah PPPS menurut letak hipospadia, untuk distal 8,1 ± 1,19, medial 7,31 ± 1,10 dan untuk proksimal 7,75 ± 1,32. Total jumlah PPPS menurut jenis operasi, untuk TIP 7,72 ± 1,17, Duckett 7,14 ± 1,35 dan Onlay Island Flap 8,4 ± 1,8. Dengan uji analitik Kruskal Wallis, didapatkan adanya hubungan yang signifikan antara tingkat kepuasan orang tua pasien (PPPS) dengan jumlah penghasilan orang tua dan dengan tipe hipospadia (p < 0,05).* ***Simpulan:*** *Secara keseluruhan, nilai kepuasan pasien atas hasil operasinya baik pada hipospadia tipe proksimal, medial dan distal adalah di atas rerata. Terdapat hubungan signifikan antara skor PPPS dengan jumlah penghasilan orang tua dan dengan tipe dari hipospadia.*

***Kata kunci:*** *Hipospadia, kosmetik, pediatric penile perception score.*

***ABSTRACT***

***Objective:*** *To evaluate patients or parents cosmetic satisfaction rate after urethroplasty procedures in patients with hypospadia.* ***Material & Method:*** *We prospectively collected data from parents whose children underwent urethroplasty procedures in Cipto Mangunkusumo Hospital since early 2001 until mid 2009, within 18 years old age. Data collected were age, first and last time of operation, type of hypospadia, characteristic of hypospadia, technique used for urethroplasty and time of operation. We also asked questionnaire about parental background and Pediatric Penile Perception Score (PPPS) questions, which contains (1) Satisfaction in shape and position of the urethral meatus, (2) Satisfaction in penile glans appearance, (3) Satisfaction in penile skin appearance, (4) Satisfaction in overall penile appearance. Each question has 4 types of score: very satisfied is 3, satisfied is 2, unsatisfied is 1, and very unsatisfied is 0. Using Kruskal Wallis and Mann Whitney statistical analysis, we analyzed the association between parental background, type of hypospadia, and technique used for urethroplasty with PPPS.* ***Results:*** *From 178 patients, 76 can be contacted. Mean age of first operation is 5,67 ± 3,66; mean PPPS for meatal appearance is 1,88 ± 0,46; mean PPPS for glans is 2,02 ± 0,32; mean PPPS for penile skin is 1,95 ± 0,39; mean PPPS for general appearance is 1,89 ± 0,45 and mean PPPS is 7,75 ± 1,31. Total PPPS based on type of hypospadia: distal hypospadia 8,1 ± 1,19; medial hypospadia 7,31 ± 1,10 and for proximal hypospadia 7,75 ± 1,32. Total PPPS based on operation technique: TIP 7,72 ± 1,17; Duckett 7,14 ± 1,35 and Onlay Island Flap 8,4 ± 1,8. Using Kruskal Wallis statistic analysis, parents satisfaction rate is significantly associated with monthly income and type of hypospadia (p<0,05).* ***Conclusion:*** *Overall, satisfaction rate of operation outcomes in proximal, medial and distal hypospadia are above average. There is significant association between PPPS with economic status and type of hypospadia.*

***Keywords:*** *Hypospadia, cosmetic, pediatric penile perception score.*

Correspondence: Edhi Hapsari, c/o: Department of Urology, Faculty of Medicine/Indonesia University, Cipto Mangunkusumo Hospital. Jl. Diponegoro 71, Jakarta 10430. Phone: 021-3152892. Mobile phone: 0811870016. Email: teaus78@yahoo.com

## INTRODUCTION

Hypospadia is a congenital anomaly that occured in 3,2 from 1000 in male newborns.[1] Hypospadia can be described as 3 anatomical anomalies and development of the penis (1) Ventral position of the meatus, varies from perineum until glans, (2) Chordee or penile ventral curvature, (3) Distribution of penile skin, where there is a skin deficit at ventral site compared to dorsal site.[2]

The goal in hypospadia repair is reconstructing the urethra to the tip of the glans and straightening the penis. Succesful hypospadias surgery ensures a cosmetic penile appearance, voiding in standing position and normal sexual function in adulthood.[3,4] Recent progress in hypospadia surgery allows us to achieve good cosmetic results, unimpaired sexual function and normal voiding position. Operation techniques were developed to achieved a near normal result as expected by patients, eventhough sometimes the cosmetic results were quite unsatisfying due to operation scars.[5] Patient's satisfaction on final cosmetic appearance is important, and will have impact on psychosocial development in adulthood.

Evaluation between patients and surgeons satisfaction on final operation result, was first introduced by Schwobel et al (1987).[6] The same research was done by Mureau et al (1995), who compared 8 aspects of penile appearance after urethroplasty with patients' and urologists opinion.[7] Both came with different results. Schwobel et al (1987) reported high satisfaction rate in final results, when Mureau et al (1995) reported lower satisfaction rate in patients compared to urologists.[6,7]

Weber et al (2008) reported a study about penile perception and appearance after urethroplasty procedure according to parents and patients. Urologist opinion was not included to achieved objective result, which afterwards known as Pediatric Penile Perception Score (PPPS).[5] PPPS has proven its reliability to evaluate cosmetic outcomes after urethroplasty procedure.

## OBJECTIVE

To evaluate patients or parents cosmetic satisfaction rate after urethroplasty procedures in patients with hypospadia.

## MATERIAL & METHOD

We prospectively collected data from parents whose children underwent urethroplasty procedures in Cipto Mangunkusumo Hospital since early 2001 until mid 2009, within 18 years old age. Data collected are patients age, first and last time of operation, type of hypospadia, characteristic of hypospadia, technique used for urethroplasty and time of operation. With telephone calls by one researcher, we also asked questionnaire about parental background and four Pediatric Penile Perception Score (PPPS) questions, which contains (1) Satisfaction in shape and position of the urethral meatus, (2) Satisfaction in penile glans appearance, (3) Satisfaction in penile skin appearance, (4) Satisfaction in overall penile appearance. Each question has 4 type of score: very satisfied is 3, satisfied is 2; unsatisfied is 1, and very unsatisfied is 0. Using Kruskal Wallis and Mann Whitney statistical analysis, we analyzed the correlation between parental background, type of hypospadia, and technique used for urethroplasty with PPPS.

## RESULTS

We found data of 178 boys with age 2 until 18 years old who had underwent urethroplasty

**Table 1.** Patient characteristics.

| | Type of Hypospadia | | | |
|---|---|---|---|---|
| | Distal | Medial | Proximal | Total |
| N of patients | 9 | 50 | 17 | 76 |
| Mean ± SD age (year) | 10 ± 3,80 | 9,08 ± 4,51 | 9,00 ± 3,95 | 9,17 ± 4,27 |
| Mean age first op (year) | 6,67 ± 2,60 | 5,72 ± 3,08 | 5,76 ± 4,49 | 5,67 ± 3,66 |
| Mean ± SD last op (year) | 2,55 ± 1,94 | 3,36 ± 2,23 | 3,00 ± 2,79 | 3,17 ± 2,24 |
| Operation technique | | | | |
| TIP | 1 | 21 | 3 | 25 |
| Duckett | - | 8 | 7 | 15 |
| Onlay Island | - | 10 | 4 | 14 |
| Others | 8 | 11 | 3 | 22 |

procedure for proximal, medial and distal hypospadia within 2001 until mid 2009 at Cipto Mangunkusumo Hospital, Jakarta. From total of 178 patients, we succeeded in contacting 76 of them (table 1 & 2).

Penile length satisfaction is not included in PPPS. However, satisfaction about penile general appearance after urethroplasty procedure considered have included patient's or parents' opinion about penile length (table 4).

Using Kruskal Wallis statistical analysis, we evaluate the comparison between PPPSS with parental background, technique of operation, and type of hypospadia. In statistical analysis, we found a significant association between monthly income and PPPS (p = 0,003). In Mann Whitney analysis, we found p = 0,013 between under 1 million income with 1-5 million monthly income, p = 0,203 between 1-5

**Table 2.** Parent characteristics.

| | | Type of Hypospadia | | | |
|---|---|---|---|---|---|
| | | Distal | Medial | Proximal | Total |
| Religion | Moslem | 6 | 40 | 16 | 62 |
| | Christian (Protestant) | 1 | 10 | 1 | 12 |
| | Christian (Catholic) | 1 | - | - | 1 |
| | Others | 1 | - | - | 1 |
| Ethnic | Javanese | 3 | 24 | 7 | 34 |
| | Sundanese | 2 | 10 | 6 | 18 |
| | Batak | 1 | 7 | - | 8 |
| | Others | 3 | 9 | 4 | 16 |
| Education | High School | 5 | 22 | 9 | 36 |
| | Bachelor graduate | 2 | 19 | 5 | 26 |
| | Diploma graduate | 2 | 5 | 1 | 8 |
| | Others | - | 4 | 2 | 6 |
| Income/month (Rupiah) | Under 1 million | 3 | 10 | 3 | 16 |
| | 1 – 5 million | 5 | 29 | 9 | 43 |
| | Above 5 million | - | 4 | 2 | 6 |
| | Unknown | 1 | 7 | 3 | 11 |

**Table 3.** Pediatric penile perception score (PPPS).

| | Meatal | Glans | Penile Skin | Appearance |
|---|---|---|---|---|
| PPPS* | | | | |
| 0 | - | - | - | - |
| 1 | 13 (17,1%) | 3 (3,9%) | 8 (10,5%) | 12 (15,8%) |
| 2 | 59 (77,6%) | 68 (89,5%) | 64 (84,2%) | 60 (78,9%) |
| 3 | 4 (5,3) | 5 (6,6%) | 4 (5,3%) | 4 (5,3%) |
| | 1,88 ± 0,46 | 2,02 ± 0,32 | 1,95 ± 0,39 | 1,89 ± 0,45 |

Total PPPS = 7,75 ± 1,31 * 0 = Very unsatisfied 1 = Unsatisfied 2 = Satisfied 3 = Very satisfied

**Table 4.** Satisfaction of penile length

| | Distal | Medial | Proksimal |
|---|---|---|---|
| Very unsatisfied | 0 | 0 | 0 |
| Unsatisfied | 0 | 7 (14%) | 5 (29,4%) |
| Satisfied | 7 (78%) | 43 (86%) | 12 (70,6%) |
| Very satisfied | 2 (22%) | 0 | 0 |
| Total patients | 9 | 50 | 17 |

**Table 5.** Relationship between parental background and IPSS

| | | PPPS | *p |
|---|---|---|---|
| Religion | Moslem | 7,84 ± 1,45 | p = 0,23 |
| | Protestant | 7,33 ± 0,78 | |
| | Catholic | 8,00 | |
| Ethnic | Javanese | 7,94 ± 1,41 | p = 0,47 |
| | Sundanese | 7,50 ± 0,86 | |
| | Batak | 7,37 ± 0,92 | |
| Education | High school | 7,75 ± 1,2 | p = 0,59 |
| | Bachelor | 7,65 ± 1,67 | |
| | Diploma | 7,75 ± 0,7 | |
| Income/month (Rupiah) | Under 1 million | 8,19 ± 1,64 | p = 0,03 |
| | 1 – 5 million | 7,74 ± 1,16 | |
| | Over 5 million | 8,33 ± 1,97 | |

*p was calculated in comparison of parental background and PPPS using Kruskal Wallis statistical analysis

**Table 6 .** Relationship between type of hypospadia and PPPS

| PPPS | Distal | Medial | Proksimal | |
|---|---|---|---|---|
| Meatal | 1,9 ± 0,32 | 1,83 ± 0,38 | 1,94 ± 0,57 | |
| Glans | 2,1 ± 0,32 | 1,91 ± 0,84 | 2,13 ± 0,34 | *p = 0,006 |
| Penile skin | 2,1 ± 0,32 | 1,80 ± 0,4 | 2,06 ± 0,36 | |
| Appearance | 2,0 ± 0,47 | 1,77 ± 0,43 | 2,00 ± 0,45 | |
| Total PPPS | 8,1 ± 1,19 | 7,31 ± 1,10 | 7,75 ± 1,32 | |

*p was calculated in comparison of hypospadia type and PPPS using Kruskal Wallis statistical analysis.

**Table 7.** Relationship between operation technique and PPPS

| PPPS | TIP | Duckett | Onlay Island | |
|---|---|---|---|---|
| Meatal | 1,88 ± 0,44 | 1,85 ± 0,36 | 1,93 ± 0,7 | |
| Glans | 2,04 ± 0,2 | 1,85 ± 0,36 | 2,2 ± 0,4 | *p = 0,30 |
| Penile skin | 1,92 ± 0,4 | 1,71 ± 0,47 | 2,13 ± 0,35 | |
| Appearance | 1,88 ± 0,44 | 1,71 ± 0,47 | 2,07 ± 0,45 | |
| Total PPPS | 7,72 ± 1,17 | 7,14 ± 1,35 | 8,4 ± 1,8 | |

*p was calculated in comparison of operation technique and PPPS using Kruskal Wallis statistical analysis.

million income with over 5 million monthly income and p = 0,88 between under 1 million income with over 5 million monthly income. There is a significant association between PPPS with monthly income of under 1 million and 1-5 million (table 5).

With Kruskal Wallis statistic analysis, we found a significant association between type of hypospadia and PPPS (p = 0,006). In Mann Whitney analysis between type of hypospadia and PPPS, we found p = 0,0013 between medial and distal type, p = 0,0013 in medial and proximal type. Therefor, there is a significant association between PPPS with medial and distal type, as well as in medial and proximal type (table 6).

We evaluated three most commonly used operation techniques, which were TIP, Duckett, and Onlay Island Flap. Onlay Island Flap was found to have the highest satisfaction rate on meatal shape, glans, penile skin, and overall appearance proven by PPPS. Using Kruskal Wallis and Mann Whitney analysis, we found that there are no significant association between operation technique and PPPS (table7).

## DISCUSSION

A total of 178 cases were collected, only 76 can be contacted and agreed to participate in this study. The difficulty in collecting data were due to incomplete medical report, especially lack of patient contact numbers, or some of them already moved out. We found mean age on first urethroplasty procedure is 5,67 ± 3,66. This age is much older than the recommended age of repair by Manzoni et al, which stated the best age for hypospadia repair is in first 18 months of age.[8] Djakovic et al (2008) in his study stated that the right time to perform hypospadia repair is between 6 months – 2 years of age.[9] According to Jones et al (2009), children under 5 years old will not remember the procedure performed, thus will avoid traumatizing operation experience in children with hypospadia.[10] In our study, the reason for late procedure is probably due to low economic condition of patients. And considering that most of Indonesian population is Moslem, with habbit of performing circumcision on pre school ages (below 6 years old), late diagnosis of hypospadia oftenly occurred. Lack of parents knowledge about hypospadia can also contribute in its late diagnosis. Most of the respondents in this study are parents, considering that most of the patients are children and not old enough to understand the meaning of PPPS questionnaire asked by our researcher. In a few case where the patient's age is already 16 years old and above, we asked the patient to evaluate the satisfaction rate by himself, according to PPPS which are meatal aspect, glans, penile skin, and general appearance.[5]

Mostly used repair technique was TIP, especially for medial type hypospadia, followed by Duckett and Onlay Island Flap. TIP was commonly used due to its flexibility for medial until distal type hypospadia.[11] In this study, Duckett was commonly used in proximal type hypospadia.

For subjective parents perception, we analyzed the association of PPPS with parental background, including religion, education, ethnic an economic condition. In statistic analysis we found that the only corresponding factor with PPPS is economic condition (p = 0,03). Objectively, we analyzed the association of PPPS with hypospadia types and operation techniques.

In our study, we found mean of meatal score is 1,88 ± 0,46, penile skin score is 1,95 ± 0,39 and general appearance score is 1,89 ± 0,45 which were slightly below satisfied, meanwhile glans score is 2,02 ± 0,32. Unsatisfying results on shape of the glans reported in 2 patients, 6 patients reported fistulas and 4 patients reported unsatisfying meatal position, while 3 patients reported small meatal opening and 7 patients reported uneven distribution of penile skin. The highest satisfaction rate found on proximal type hypospadia, with meatal score: 1,94; glans score: 2,13; penile skin score: 2,06 and general appearance score: 2. In question about satisfaction on penile length, 2 patients reported very satisfied (2,6%), 62 satisfied (81,6%) and 12 patients (15,8%) are not satisfied. The reason by unsatisfied patients due to penile length are uneven penile skin distribution, and retracted appearance of the penile skin.

Compared to previous study by Rynja et al (2009), we found lower PPPS rate in distal hypospadia in our study (8,1 ± 1,19 vs 8,70 ± 1,29) as well as in medial type (7,31 ± 1,10 vs 9,00 ± 0,00). However, we have higher score for proximal hypospadia compared to previous study (7,75 ± 1,32 vs 7,67 ± 1,63). Possibly because there are more cases of proximal hypospadia in our study is 40,79% compared to Rynja et al (2009) is 15,38%. Proximal hypospadia is more complex and difficult compared to distal and medial type. In our study, we found there is a significant association between hypospadia type and PPPS (p = 0,006). Other possibility is by operation technique used in repair. Rynja et al (2009) mostly used Mathieu and prepuce assisted technique.[11] However, we do not found a significant association between operation technique used with PPPS (p = 0,30).

Penile length is considered to affect patient's point of view on the final operation result, which included in general appearance consideration. Patient who is satisfied with his operation result will have positive value on their appearance score. Mureau (1995) and Sommerlad et al (1975) in their studied also stated that satisfaction over penile appearance related to the length of the penile.[12,13] Unsatisfying result unfortunately will affect patient's psychosocial development in his adulthood.[14,15] Berg et al (1981) in his study claimed that unsatisfying penile length were commonly found in proximal hypospadia compared to distal. This result is similar to our study, where proximal hypospadia has higher satisfaction rate on penile length compared to others (22,6%). On distal hypospadia, all patients claimed satisfaction on their final result.[16]

## CONCLUSION

Overall, patient's satisfaction rate in proximal,

medial, and distal type are above average. A few patients still hope for more perfect result, which there is a different understanding between patient's and surgeon's point of view about the perfect result itself. There is no significant association between PPPS which considered to represent patient's satisfaction rate with religion, ethnic, education and operation technique used. In statistical analysis there is a significant association between PPPS with economic status and type of hypospadia.

**REFERENCES**


1. Sweet RA, Schroot HG, Kurland R. Study of incidence of hypospadia in Rochester Minnesota 1940-1970 and a case control comparison of etiological factors. Mayo Clinic Proc. 1974; 49: 52-8.
2. Mouriquand PD, Persad R, Sharma S. Hypospadias repair: Current principles and procedures. Br J Urol 1995; 76(suppl. 3): 9-22.
3. Moriya K, Kakizaki H, Tanaka H, Furuno T, Higashiyama H, Sano H, et al. Long-term cosmetic and sexual outcome of hypospadias surgery: Norm related study in adolescence. J Urol. 2006; 176(4): 1889-93.
4. Bubanj TB, Perovic SV, Milicevic RM, Jovcic SB, Marjanovic ZO, Djordjevic MM. Sexual behaviour and sexual function of adults after hypospadia surgery: A comparative study. J Urol. 2004; 171(5): 1876-9.
5. Weber DM, Schönbucher VB, Landolt MA, Gobet R. The pediatric penile perception score: An instrument for patient self assessment and surgeon evaluation after hypospadia repair. J Urol. 2008; 180(3): 1080-4.
6. Schwobel MG, Sacher P, Stauffer UG. Denis Browne: Corrective surgery of hypospadias: Long term results. Z Kinderchir. 1987; 42(3): 157-60.
7. Mureau MA, Slijper FM, Slob AK, Verhulst FC, Nijman RJ. Satisfaction with penile appearance after hypospadia surgeries: The patient and surgeon view. J Urol. 1996; 155(2): 703-6.
8. Manzoni G, Bracka A, Palminteri E, Marrocco G. Hypospadias surgery: When, what and by whom. BJU Int. 2004; 194: 1118-95.
9. Djakovic N, Nyarangi-Dix J, Ozturk A, Hohenfellner M. Hypospadias. Adv Urol; 2008. p. 6501-35.
10. Jones BC, O'Brien M, Chase J, Southwell BR, Hutson JM. Early hypospadias surgery may lead to a better long-term psychosexual outcome. J Urol. 2009; 182: 1744-50.
11. Rynja SP, Wouters GA, Van Schaijk M, Kok ET, De Jong TP, De Kort LM. Long-term follow up of hypospadias: Functional and cosmetic results. J Urol. 2009; 182: 1736-43.
12. Mureau MAM, Slijper FME, Nijman RJM, Van derMeulen JC, Verhulst FC, Slob AK. Psychosexual adjustment of children and adolescents after different types of hypospadias surgery: A norm-related study. J Urol. 1995; 154: 1902-7.
13. Sommerlad BC. A long-term follow-up of hypospadias patients. Brit J Plast Surg. 1975; 8: 324.
14. Mureau MAM, Slijper FME, Slob AK, Verhulst FC, Nijman RJM. Satisfaction with penile appearance after hypospadias surgery: The patient and surgeon view. J Urol. 1996; 155: 703-6.
15. Mureau MAM, Slijper FME, Slob AK, Verhulst FC. Genital perception of children, adolescents, and adults operated on for hypospadias: A comparative study. Journal of Sex Research. 1995; 32: 289-98.
16. Berg R, Svensson J, Aström G. Social and sexual adjustment of men operated for hypospadias during childhood: A controlled study. J Urol. 1981; 125: 313.
17. Moriya K, Kakizaki H, Tanaka H, Furuno T, Higashiyama H, Sano H, et al. Long-term cosmetic and sexual outcome of hypospadias surgery: Norm related study in adolescence. J Urol. 2006; 176: 1889-93.
18. Hoag C, Gotto GT, Morrison KB, Coleman GU, MacNeily AE. Long-term functional outcome and satisfaction of patients with hypospadias repaired in childhood. Can Urol Assoc. 2008; 2(1): 23–31.
19. Sheldon CA, Duckett JW. Hypospadias. Pediatr Clin North Am. 1987; 34: 1259-72.
20. Duckett JW. Hypospadias. In Walsh PC, Retik AB, Vaughan ED Jr, Wein AJ (eds): Campbell's Urology. Philadelphia: WB Saunders. 1998; 2: 2093–119.
21. Dolk H, Vrijheid M, Scott J, Addor M, Botting B. Towards the effective surveillance of hypospadias. Environ Health Perspect. 2004; 112: 398-402.