

The outcome of hypospadias surgery and its advanced treatment in Arifin Achmad General Hospital in January 2019 – December 2020



Tu Bagus Odih Rhomdani Wahid^{1*}, Tania Nugrah Utami², Rizka Annisa Harahap³

ABSTRACT

Introduction: Hypospadias, the most common congenital genital anomaly, is defined as the abnormal ventral opening of the urethral meatus extent from the proximal tip of the glans penis, penis rod, scrotum until perineum. The incidence of Hypospadias continued to increase from time to time. Urethroplasty and orthoplasty is the only possible treatment for Hypospadias until this time. Surgical reconstruction cannot always be done in one step, many cases need more than one reconstruction even though an experienced surgeon did it. This study aims to describe patients' characteristics in Arifin Achmad General Hospital.

Methods: This is a descriptive retrospective study using a total sampling method and carried out 28 hypospadias patients at Pediatric Surgery of Arifin Achmad General Hospital from January 2019 until December 2020. Data were analyzed descriptively to describe the patient's characteristics including age, hypospadias type, frequency of surgery based on Hypospadias type, day of hospitalization based on surgical procedure, complication after surgery based on Hypospadias type, and advanced treatment for the complication.

Results: From 28 patients with hypospadias, it could be concluded that the highest number of hypospadias patients found in the 0-5 years age group (50%) with the most common type was penoscrotal as many as 12 cases (43%). One stage procedure was predominant and attributed to 75% more than multistage procedure (25%). Chordectomy procedure got hospitalized for 3 days and multi procedure (cordectomy + urethroplasty + scrotoplasty) got hospitalized for 7 days. Fistula urethrocutaneous majority found in shaft penile type as a complication after surgery (78%) and had cutaneous fistula closure as an advanced treatment for the complication. From the 28 cases, 23 cases were successful without complication (82%) and 5 cases had fistula as a complication after surgery (18%).

Conclusion: Hypospadias treatment in Pediatric Surgery division at Arifin Achmad General Hospital such as Characteristics of hypospadias patient and surgical outcome majority had satisfied outcome and advanced treatment for complication after surgery is fistula urethrocutaneous closure.

Keywords: outcome, characteristics, hypospadias surgery, advanced treatment.

Cite This Article: Wahid, T.B.O.R., Utami, T.N., Harahap, R.A. 2022. The outcome of hypospadias surgery and its advanced treatment in Arifin Achmad General Hospital in January 2019 – December 2020. *Bali Medical Journal* 11(1): 345-348. DOI: 10.15562/bmj.v11i1.3287

¹Departement of Surgery Division of Pediatric Surgery, Faculty of Medicine, Universitas Riau, Arifin Achmad General Hospital, Riau, Indonesia;

²Resident of Departement of Surgery, Faculty of Medicine, Universitas Riau, Arifin Achmad General Hospital, Riau, Indonesia;

³Intern of Departement of Surgery Division of Pediatric Surgery, Arifin Achmad General Hospital, Riau, Indonesia;

*Corresponding author:

Tu Bagus Odih Rhomdani Wahid;
Departement of Surgery Division of Pediatric Surgery, Faculty of Medicine, University of Riau, Arifin Achmad General Hospital, Riau;
tubaguswahid@gmail.com

Received: 2022-02-17

Accepted: 2022-04-10

Published: 2022-04-26

INTRODUCTION

Hypospadias is the most common congenital genital anomaly. Hypospadias is defined as the abnormal ventral opening of the urethral meatus extent from the proximal tip of the glans penis, penis rod, scrotum until the perineum. Besides ectopic urethral openings, it can be accompanied by some defect of corpus spongiosum, corpus cavernosum, and preputium such as penile curvature or "chordae" and "hooded foreskin".¹⁻³

The incidence of Hypospadias continued to increase from time to time.

The Metropolitan Atlanta Congenital Defects Program (MACDP) shows that between 1968 – 1990, there was an increase from 1.1 cases to 2.7 cases in 10.000 male live birth and there are 5.5 cases in 10.000 male live birth in 1993. The Birth Defect Monitoring Program data show that Hypospadias incidence in 1970 was 20.2 in 10,000 male live birth and increased in 1993 into 39.7 cases in 10,000 male live birth.³⁻⁵

Urethroplasty and orthoplasty is the only possible treatment for Hypospadias until this time.¹⁻³ Surgical reconstruction

cannot always be done in one step, many cases need more than one reconstruction even though an experienced surgeon did it.

Various things can be a risk factors for Hypospadias, such as environmental, genetic, and multifactorial etiologies.⁶ Environmental factors such as pesticide exposure, industrial residue and vegetarian diet during pregnancy.⁷⁻¹⁰ Low birth weight influences hypospadias incidence.¹¹⁻¹⁴

Due to the complication of hypospadias and the increase of its incidence, the researchers intend to investigate the

etiology and treatment of hypospadias along with its surgery outcome in Arifin Achmad General Hospital, Pekanbaru, Riau even though the genetic etiology aspect needs more investigation in the future.

METHODS

This is a descriptive retrospective study using the total sampling method. Samples are 28 hypospadias patients at Pediatric Surgery of Arifin Achmad General Hospital from January 2019 until December 2020. The data is analyzed descriptively to describe patient's characteristics including age, hypospadias type, frequency of surgery based on Hypospadias type, day of hospitalization based on Surgical Procedure, complication after surgery based on Hypospadias type, and advanced treatment for the complication

RESULTS

There were 28 hypospadias patients from January 2019 until December 2020 who met inclusion criteria at Pediatric Surgery of Arifin Achmad General Hospital Pekanbaru collected from the medical record in two months (August 2020 until September 2021).

Based on [Table 1](#), it can be concluded that the highest number of hypospadias patients found in 0-5 years age group (50%) followed by 5-10 years age group as much as 21,4% and above ten years age as much as 28,6%.

From [table 2](#), it can be seen that the most common type of Hypospadias is penoscrotal type as many as 12 cases (43%), followed by shaft penile & anterior type (32%), and scrotal type (25%).

Based on [table 3](#), it can be concluded that most Hypospadias patients in Arifin Achmad General Hospital only got one stage surgery for anterior (shaft &

penoscrotal) type as many as 21 cases (75%) and 7 cases get multistage surgery for posterior (scrotal) type (25%).

Based on [table 4](#), it can be seen that on chordectomy procedure got hospitalized for 3 days and the multi procedure (chordectomy + urethroplasty + scrotoplasty) got hospitalized for 7 days.

Based on [table 5](#), it can be seen that most of shaft penile types of hypospadias were successful with one stage procedure surgery as much as 78% and 2 patients (22%) had fistula urethrocutaneous as a complication after surgery. For the penoscrotal type, we concluded from 12 cases of penoscrotal type, 11 cases were successful with external urethral meatus

(MUE) at the tip of the Glans penis (8%) and 1 case from 12 cases of penoscrotal type had fistula urethrocutaneous as a complication after surgery. In the scrotal type of hypospadias, successful with MUE at the tip of glans penis as much as 7 cases (71%) and 2 cases of scrotal type (29%) got fistula urethrocutaneous as a complication.

Based on [table 6](#), it can be concluded that patients with fistula urethrocutaneous as a complication of surgery had cutaneous fistula closure as an advanced treatment for the complication. We can see in shaft penile type, there are 2 cases (22%) that had cutaneous fistula closure and got a good result for the advanced treatment. Same things in penoscrotal type, there

Table 1. Shows distribution based on age group.

Age	Total (n)	Percentage
0-5 years	14	50%
>5-10 years	6	21,4%
>10 years	8	28,6%
Total	28	100%

Table 2. Distribution base on hypospadias type.

Type	Total (n)	Percentage (%)
Shaft penile & anterior	9	32%
Phenosrotal	12	43%
Scrotal	7	25%
Total	28	100%

Table 3. Frequency of surgery based on hypospadias type.

Stage	Hypospadias Type	Total (n)	Percentage (%)
One stage procedure	Anterior (Shaft & Penoscrotal)	21	75%
Multistage procedure	Posterior (Scrotal)	7	25%
Total		28	100%

Table 4. Day of hospitalized based on surgical procedure.

Surgical Procedure	Day of hospitalized
Chordectomy	3 days
Chordectomy + Urethroplasty + Scrotoplasty	7 days

Table 5. Complication (urethrocutaneous fistula) after surgery based on hypospadias type.

Hypospadias Type	Successful	Total (n)	Percentage (%)	Complication	Total (n)	Percentage (%)
Shaft penile (9)	MUE at the tip of Glans penis	7	78%	Fistula urethrocutaneous	2	22%
Penoscrotal (12)	MUE at the tip of Glans penis	11	92%	Fistula urethrocutaneous	1	8%
Scrotal (7)	MUE at the tip of Glans penis	5	71%	Fistula urethrocutaneous	2	29%

Table 6. Advanced treatment for a complication.

Hypospadias	Total cases (n)		Total complication (n)		Complication	Treatment	Result
Shaft penile	9	100%	2	22%	Fistula Uretrocutaneous	Fistula cutaneous closure	Good, Fistula cutaneous re-closure
Penoscrotal	12	100%	1	8%			
Scrotal	7	100%	2	29%			

Table 7. Cases and complication.

Hypospadias cases	Total (n)	Successful	Total (n)	Percentage (%)	Complication	Total (n)	Percentage (%)
Shaft penile, penoscrotal, and scrotal type	28	MUE at the tip of the glans penis	23	82%	Fistula urethrocutaneous	5	18%

is only 1 case (8%) from 12 total cases of penoscrotal type hypospadias and had a good result for cutaneous fistula closure. Scrotal type of hypospadias is the most frequent type of hypospadias who got fistula urethrocutaneous as complication as much as 2 cases (29%) from total 7 cases and one case got a good result but one patient needs fistula cutaneous re-closure as advanced treatment.

From table 7 it can be concluded that from 28 cases of hypospadias, 23 cases were successful as the result of surgery as much as 82% and 5 cases got fistula urethrocutaneous as the complication as much as 18%.

DISCUSSIONS

The highest prevalence of Hypospadias was found in the age group 0-5 years (50%). The second highest case was found in the age group >10 years (28.6%) and the last in the age group > 5-10 years (21.4%). Based on this study, the type of Hypospadias is classified into 3 types, shaft penile/anterior type, penoscrotal type, and scrotal type. From 28 cases, we found that the most frequent type of hypospadias is penoscrotal type as much as 43% followed by penile/anterior type (32%) and scrotal type as much as 25% from January 2019 – December 2020 period. A study conducted by Limatahu et al.¹¹ that the most frequent case of hypospadias was found is penoscrotal type as much as 29.4% followed by scrotal type 23.5%, distal penile type (5,9%) and the rest was penile type. Something similar was reported by Duarsa et al.¹² that the most

common of hypospadias is penoscrotal type as many as 33.3% followed by penile/anterior type (26.19%) and scrotal type (21.43%).¹²⁻¹⁷ A study conducted by Yassin et al.¹⁸ found that the highest number of hypospadias is < 6 years old (79%) and >6 years old (21%).

In contrast, a study conducted by Noegroho et al.¹⁴ had a different result, the most common type of hypospadias is distal type (72,25%) followed by proximal type (27.3%), similar result from Prada et al.¹⁵ that anterior type is the most common of hypospadias type as many as 36.06% followed by medius type (34.42%) and posterior type (29.50%).

The most frequent surgical procedure for Hypospadias patients in Pediatric Surgery at Arifin Achmad General hospital is a one-stage procedure (75%) followed by a multi-stage procedure (25%). A similar result from a study conducted by Duarsa et al.¹² the most frequent of surgical procedure is one stage procedure as much as 85.19% than multi-stage procedure (14,81%). Harb et al.¹⁶ had a similar result that a one-stage surgical procedure is more common as many as 58,9% than multi-stage procedural as many as 41.1%.

Based on the day of hospitalization, it can be seen that on chordectomy procedure got hospitalized for 3 days and the multi procedure (chordectomy + urethroplasty + scrotoplasty) got hospitalized for 7 days. Study by Abdullaey et al.¹³ found that patients with urethroplasty procedures generally need 5-7 days of hospitalized and patients with cordectomy only need 3 days of hospitalized, the same result as this study.

Most of shaft penile type of hypospadias was successful with one stage procedure surgery as much as 78% and 2 patient (22%) had fistula urethrocutaneous as a complication after surgery. For penoscrotal type, we concluded from 12 cases of penoscrotal type, 11 cases were successful with MUE at the tip of Glans penis (8%) and 1 case from 12 cases of penoscrotal type had fistula urethrocutaneous as a complication after surgery. In a scrotal type of hypospadias successful with MUE at the tip of glans penis as much as 7 cases (71%) and 2 cases of scrotal type (29%) got fistula urethrocutaneous as a complication.

Some studies found that the highest number of fistula urethrocutaneous was found in the posterior type of hypospadias (72.2%) followed by medius type (19.0%) and anterior type (18.2%).¹³ A study conducted by Winberg et al.¹⁷ found that the type of hypospadias with fistula urethrocutaneous was found in penile type (63.64%) followed by granular type (22.73%) and proximal type (13.63%). The most common is the penile type.

Fistula urethrocutaneous is the most common complication found in post-surgical hypospadias patients. Patients with fistula urethrocutaneous as a complication after surgery had fistula closure as an advanced treatment for the complication. A study conducted by Abdullah et al.¹³ and Yassin et al.¹⁸ said that one stage of surgical procedure has good results in this decade even though some reports said that patients with complications such as fistula urethrocutaneous will get advanced treatment such as fistula closure.^{13,17,18}

A study by Aburrhman et al.¹⁹ found

fistula urethrocutan mainly between aged 2-6 years (17%), while stenosis neourethral complication mainly at surgery above 6 years age (14%). Similar to Limatahu et al.¹¹ patients with complications after surgery were 11.8% and without complication were 88.2%.

CONCLUSION

Hypospadias treatment in Pediatric Surgery division at Arifin Achmad General Hospital such as Characteristics of hypospadias patient and surgical outcome majority had satisfied outcome and advanced treatment for complication after surgery is fistula urethrocutaneous closure.

DISCLOSURES

Conflict of Interest

All authors declared that there is no conflict of interest regarding this publication.

Funding

None.

Author Contribution

All authors had contributed in manuscript writing and agreed for the final version for publication.

Ethical Approval

This study had been ethically approved the ethical commission Faculty of Medicine, Universitas Riau, Arifin Achmad General Hospital, Riau, Indonesia.

Acknowledgments

The authors would like to thank our all members of Department of Pediatric Surgery, Departement of Plastic Surgery at Arifin Achmad General Hospital, Universitas Riau, and Universitas Syiah Kuala for all the support and contribution of us.

REFERENCES

- Duckett JW. The Island Flap Technique for Hypospadias Repair. *J Urol.* 2002;2148-52. Available from: <http://dx.doi.org/10.1097/00005392-200205000-00058>
- Snodgrass WT. Hypospadias Urethroplasty [Internet]. *Pediatric Urology.* Wiley-Blackwell; p. 201-11. Available from: <http://dx.doi.org/10.1002/9781444304183.ch26>
- Baskin LS. Hypospadias [Internet]. *Pediatric Surgery.* Elsevier; 2006. p. 1870-98. Available from: <http://dx.doi.org/10.1016/b978-0-323-02842-4.50122-4>
- Caione P. Prevalence of Hypospadias in European Countries: Is It Increasing? *Eur Urol.* 2009;55(5):1027-9. Available from: <http://dx.doi.org/10.1016/j.eururo.2009.01.051>
- Manson JM, Carr MC. Molecular epidemiology of hypospadias: Review of genetic and environmental risk factors. *Birth Defects Res Part A Clin Mol Teratol.* 2003;67(10):825-36. Available from: <http://dx.doi.org/10.1002/bdra.10084>
- Kalfa N, Philibert P, Baskin LS, Sultan C. Hypospadias: Interactions between environment and genetics. *Mol Cell Endocrinol.* 2011;335(2):89-95. Available from: <http://dx.doi.org/10.1016/j.mce.2011.01.006>
- Hayes TB, Collins A, Lee M, Mendoza M, Noriega N, Stuart AA, et al. Hermaphroditic, demasculinized frogs after exposure to the herbicide atrazine at low ecologically relevant doses. *Proc Natl Acad Sci U S A.* 2002;99(8):5476-80. Available from: <https://pubmed.ncbi.nlm.nih.gov/11960004>
- Gray LE, Kelce WR. Latent Effects of Pesticides and Toxic Substances On Sexual Differentiation of Rodents. *Toxicol Ind Health.* 1996;12(3-4):515-31. Available from: <http://dx.doi.org/10.1177/074823379601200323>
- Dolk H, Vrijheid M, Armstrong B, Abramsky L, Bianchi F, Garne E, et al. Risk of congenital anomalies near hazardous-waste landfill sites in Europe: the EUROHAZCON study. *Lancet.* 1998;352(9126):423-7. Available from: [http://dx.doi.org/10.1016/s0140-6736\(98\)01352-x](http://dx.doi.org/10.1016/s0140-6736(98)01352-x)
- North K, Golding J. A maternal vegetarian diet in pregnancy is associated with hypospadias. *BJU Int.* 2000;85(1):107-13. Available from: <http://dx.doi.org/10.1046/j.1464-410x.2000.00436.x>
- Limatahu N, Oley MH, Monoarfa A. Hypospadias Incidence Rate In Prof. Hospital. *Dr. R. D. Kandou Manado Period January 2009-October 2012.* e-CliniC. 2013;1(2). Available from: <http://dx.doi.org/10.35790/ecl.1.2.2013.3292>
- Duarsa GWK, Nugroho TD. Characteristics Of Hypospadias Cases In Sanglah General Hospital, Bali-Indonesia: A Descriptive Study. *Bali Med J.* 2016;5(1):13. Available from: <http://dx.doi.org/10.15562/bmj.v5i1.185>
- Abdullaev Z, Agzamkhodjaev S, Chung JM, Lee SD. Fistula recurrence after urethrocutaneous fistulectomy in children with hypospadias: risk factors. *J Pediatr Urol.* 2020;16:S12. Available from: <http://dx.doi.org/10.1016/j.jpuro.2020.05.038>
- Noegroho BS, Siregar SS, Firmansyah I. Characteristics of hypospadias patient in Hasan Sadikin Hospital Bandung between 2015-2018. *Journal of Community Service;* 2018;2(5):1-3. A
- Prada DW, Odih RWT, Burhanuddin L. Relationship of fistula incidence with type of hypospadias after urethroplasty. *Riau Online Medical Journal.* 2015;2(2):1-10.
- Harb A, Page F, Nassimizadeh M, Park A. Hypospadias reconstruction: 11-year follow-up study of outcomes and patient satisfaction. *Eur J Plast Surg.* 2016;40(1):23-8. Available from: <http://dx.doi.org/10.1007/s00238-016-1231-5>
- Winberg H, Arnbjörnsson E, Anderberg M, Stenström P. Postoperative outcomes in distal hypospadias: a meta-analysis of the Mathieu and tubularized incised plate repair methods for development of urethrocutaneous fistula and urethral stricture. *Pediatr Surg Int.* 2019;35(11):1301-1308. Available from: doi: [10.1007/s00383-019-04523-z](https://doi.org/10.1007/s00383-019-04523-z).
- Yassin T, Bahaeldin KH, Husein A, El Minawi H. Assessment and management of urethrocutaneous fistula developing after hypospadias repair. *Ann Pediatr Surg.* 2011;7(2):88-93. Available from: <http://dx.doi.org/10.1097/01.xps.0000397066.98404.82>
- Abdurrahman A, Hutahean AYA. The learning curve in hypospadias urethroplasty: single-surgeon experience. *Bali Med J.* 2020;9(1):408. Available from: <http://dx.doi.org/10.15562/bmj.v9i1.1747>



This work is licensed under a Creative Commons Attribution