

Original Research Article

Case series: long term experience with different types of hypospadias and its correction by single stage procedure

Amarendra Kumar¹, Chandramohan Narayan², Nameer Faiz^{3*}

¹Department of General and Pediatric Surgery, Patna Medical College and Hospital, Patna, Bihar, India

²Department of General Surgery, Nalanda Medical College and Hospital, Patna, Bihar, India

³Department of General Surgery, Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India

Received: 05 February 2018

Accepted: 07 March 2018

*Correspondence:

Dr. Nameer Faiz,

E-mail: drnameerfaiz@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Hypospadias is a relatively common congenital defect of the male external genitalia. It is present in approximately 1 in 250 male newborns. Hypospadias, in boys, is defined as an association of three anomalies of the penis: an abnormal ventral opening of the urethral meatus that may be located anywhere from the ventral aspect of the glans penis to the perineum, an abnormal ventral curvature of the penis (chordee), and an abnormal distribution of foreskin with a “hood” present dorsally and deficient foreskin ventrally.

Methods: In this study author operated 250 cases of Hypospadias of different types in different age groups during (1992-2017) using MAGPI for glandular, TIP and Flip-flap procedure for distal penile and Duckett Onlay Flap technique for Proximal penile, penoscrotal and perineal Hypospadias. Complicated / Failed Hypospadias was repaired by Trap door technique or Byer’s double tube technique.

Results: After the primary repair of Hypospadias fistula was found in 4.5% of patients. Post-operative haemorrhage was seen in 3.2% of patients. Flap Necrosis was found in 8% of patients after Mathieu’s Flip- Flap technique. The success rate of Complicated Hypospadias was quite satisfactory and Meatal Stenosis was seen in 10% of the cases. Over All study has shown superior cosmetic results and one stage repair is cost effective, satisfactory and less psychologically affecting the parents and the patients.

Conclusions: MAGPI and its different modifications in the repair for Glandular and Flip-flap or TIP for distal penile in cases of mild or no chordee. Proximal Penile has sufficient Chordee and can be corrected by dorsal plication and urethroplasty by Duckett’s Onlay flap technique. The cost-effectiveness due to single stage repair and its cosmetic results and there least complications prove the efficacy of this protocol. Single stage repair is also beneficial for developing countries like India where the follow-up compliance in the rural patients is extremely poor.

Keywords: Hypospadias, MAGPI, Mathieu flip- flap, Single-stage repair, Snodgrass TIP

INTRODUCTION

Hypospadias is a relatively common congenital defect of the male external genitalia. It is present in approximately 1 in 250 male newborns. Hypospadias, in boys, is defined as an association of three anomalies of the penis: an abnormal ventral opening of the urethral meatus that may

be located anywhere from the ventral aspect of the glans penis to the perineum, an abnormal ventral curvature of the penis (chordee), and an abnormal distribution of foreskin with a “hood” present dorsally and deficient foreskin ventrally.¹ Preoperative meatal position remains the most commonly used criterion for classification of the types of Hypospadias. Glandular, coronal, and subcoronal

(anterior/distal) defects constitute the great majority (50% to 70%) of hypospadias. Duckett has reported overall rates of approximately 50%, 30%, and 20% for distal penoscrotal, middle, and posterior/proximal hypospadias, respectively.

Other anatomical variables which decide the type of Surgery required include; Foreskin- (well/poorly developed/absent), glans and groove configuration- shallow/conical/deep/well developed, urethral plate (well-developed/hypoplastic/broad/narrow), Penile size (normal/reduced), curvature (present/absent).

Pre-operative evaluation

A proper pre-operative assessment of the child is required to rule out presence of associated abnormalities and prepare a plan of surgery. Associated abnormalities include cryptorchidism (7% to 9%) and inguinal hernia (9%) and/or hydrocele (16%). It was found that the prevalence of inguinal hernia was similar in anterior, mid, and posterior hypospadias but cryptorchidism was predominant in boys with posterior defects.

A high index of suspicion for an intersex state should accompany presumed males with any degree of hypospadias and cryptorchidism. Approximately 15% of individuals with hypospadias and a palpable undescended gonad will have an intersex condition. Approximately 50% of individuals with hypospadias and a unilateral nonpalpable gonad will have an intersex condition.

METHODS

Exclusion

All cases of Hypospadias having no foreskin (due to circumcision or previous surgery or congenitally absent) were not included in the case series as a single staged repair was not considered suitable for such cases.

Age

Although the best time for surgery for hypospadias is between 6 and 12 months of age, but all patients reporting to the OPD were evaluated and brought in to the study. Surgery was performed on the different age groups of children with number of cases (0-5 years -115 cases, 5-8 years -76 cases, 8 -12 years-34 cases, >12 years-25 cases). General anaesthesia, typically with endotracheal intubation. Agent for adjunctive analgesia used was bupivacaine (0.25%) without epinephrine administered as either a caudal or dorsal penile nerve block.

General principles of repair

- Penile curvature and its correction (orthoplasty)
- Urethroplasty
- Meatoplasty

- Glanuloplasty
- Skin coverage

Choice of surgery

The goal of primary hypospadias repair is to achieve both cosmetic and functional normality. One procedure is not suitable for all types of cases and different methods have been described in previous literatures.¹

Over 200 procedures for repair is known varying from multistage to single stage procedure.

In this case series nearly, all anatomical variants of Hypospadias (excluding those with no foreskin) were uniformly repaired by single stage repair. The protocol followed the following guidelines of surgery.

In cases of mild chordee and no chordee as in meatal and Coronal type no correction of Chordee was required. In all other cases requiring Correction of Chordee. It was done by dissection of urethral plate and urethra from penoscrotal skin and dorsal plication of Tunica Albuginea by using multiple Figure of 8 stitches. For glandular Hypospadias MAGPI (Meatal Advancement and glanuloplasty Incorporated) and for Coronal and Distal Penile - Mathieu's procedure (flip flap procedure) while Snodgrass TIP2 was done for penile hypospadias.



Figure 1: Mathieu's procedure (flip flap procedure).



Figure 2: Tabularized incised plate procedure (TIPS).



Figure 3: Duckett's Onlay Prepuce flap technique done and for proximal penile hypospadias.

Follow up

Patients were followed up for the maximum time possible. Depending on follow up compliance, the patients were followed from a minimum of 2 months to a maximum of 20 years. The protocol author used included 6 weekly intervals for the first 6 months and then yearly follow-up for development of stenosis and assessment of residual chordee.

RESULTS

During the follow up the following complications were found among the treated cases. The study protocol followed different surgical techniques as described above based on the site of the urethral openings and other anatomical variables but maintained that all procedures were performed in One stage except in certain cases of failure or complications.

The results of this case series were found highly satisfactory with successful outcome in most of the cases. Included is a photograph of a successful outcome after repair of penoscrotal Hypospadias (after 7 months) (Figure 4).

Table 1: Complications seen during follow-up.

Complication	No. of cases	Percentage
Hemorrhage	8	3.2%
Tubal blockage	11	4.4%
Urethrocutaneous fistula	10	4%
Residual chordee and meatal stenosis	22	8.8%
Flap necrosis (mathieu flip-flap technique)	4 (out of 50)	8%

Another photograph showing the outcome of post op follow up successful repair by MAGPI for glandular Hypospadias (after 5 months) (Figure 5).



Figure 4: Successful outcome 7 months after repair of penoscrotal hypospadias.



Figure 5: Successful outcome after 5 months of repair by MAGPI for glandular hypospadias.

DISCUSSION

The results as calculated was found relatively comparable to the previous case series and studies done before. A previous study by Manzoni et al focused on one stage repair based on the quality and the development of the urethral plate and not on the pre-operative location of the meatus.³ A case series of one stage repair performed on 544 cases by Ghali AM et al found that despite an initial overall complication rate of 19%, the final success rate was 96%.⁴ Complications included fistula in 9% cases, meatal stenosis or retraction in 5%, residual chordee in 3%, stricture in 2.5%, tubal abnormality in 2%, and flap necrosis in 2%. The results are comparable to this study performed in Egypt perhaps due to the similarity of the socio-economic conditions of the patients and developing nature of the economy of the countries. Another analysis of 422 cases done by Uygur MC et al at Turkey had comparable results.⁵ The early complication rate was 18%, while the final success rate following secondary

interventions was 95%. The complications included fistula formation in 12%, flap necrosis in 3%, meatal problems in 3%, residual chordee in 1%, and urethral stricture in <1%. Another case study by Nuinga et al has concluded that success of Hypospadias repair cannot be judged in a short duration and hence the follow up protocol of this study was continued as long as 20 years to rule out long term complications.⁶ Elhalaby EA has recommended that a single staged repair can be safely and effectively performed even in patients with the most severe penoscrotal hypospadias.⁷ The modified Koyanagi technique has relatively lower complication rate than original Koyanagi repair. The original Koyanagi paramental preputial flap technique was found to have a higher incidence of fistula (29%). Chandrasekharam has reported the use of LDIF (longitudinal dorsal island flap) for single-stage mid and proximal hypospadias repair with good success and an acceptable complication rate.⁸ Complications were more common after tubularized repairs than onlay repairs (24% vs. 9.5%) in cases with poorly formed urethral plate.

The outcomes of single- and multistage repairs of proximal hypospadias are comparable; no technique can be considered better than any other. Thus, it is more judicious for a hypospadiologist to master a few of these procedures to achieve the best results, regardless of the technique used.⁹ Risk factors as severe chordee, middle and posterior localized hypospadias, and use of a pedicle island flap may increase the postoperative complication rate. There is no gold-standard technique for hypospadias repair; the procedure of choice should depend on the individual anatomy of the penis.¹⁰

Present study using the above-mentioned protocol, one of the first done in India has come to the conclusions that in a developing country like India with rural patients having poor access to good healthcare facilities. One stage Repair is beneficial in many ways. The follow-up compliance of poor rural patients is extremely poor because they need to come to the urban cities for treatment. The authors have seen multiple cases where the patients have gone for the Chordee Correction (first stage of a two-stage repair) in childhood and then reported after a decade. So, one stage repair provides a chance of quick recovery from the ailment. It also has the advantage of lesser psychological stress to the patient. The overall duration of the Hospital Stay is also reduced, thereby reducing the cost to patient. Hence it becomes cost-effective for the patient.

The authors firmly believe that one stage repair performed by an experienced Surgeon has better cosmetic outcome and a higher success rate.

ACKNOWLEDGEMENTS

Authors would like to thank respective departments for contributing patient data for having a large scale multicentric case series and also all the patients for participating in the study.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Snodgrass W. Tabularised, incised plate urethroplasty for distal hypospadias. J Urol. 1994;151:464-5.
2. Snodgrass W, Nguyen MT. Current technique of tubularized incised plate hypospadias repair. Urol. 2002;60:157-62.
3. Manzoni G, Bracka A, Palminteri E, Marrocco G. Hypospadias surgery: When, what and by whom? BJU Int. 2004;94:1188-95.
4. Ghali AM, el-Malik EM, al-Malki T, Ibrahim AH. One-stage hypospadias repair. Experience with 544 cases. Eur Urol. 1999;36(5):436-42.
5. Uygur MC, Unal D, Tan MO, Germiyanoglu C, Erol D. Factors affecting outcome of one-stage anterior hypospadias repair: analysis of 422 cases. Pediatr Surg Int. 2002 Mar;18(2-3):142-6.
6. Nuinga J, De Gier, Verschuren, Feitz W. Long-Term Outcome of Different Types of 1-Stage Hypospadias Repair. J Urol. Oct 2005; 174:1544-8.
7. Essam E. One Stage Repair of Severe Hypospadias: Original versus Modified Koyanagi Technique. Annals of Pediatric Surgery. 2006;(2):32-8.
8. Chandrasekharam VVS. Single-stage repair of hypospadias using longitudinal dorsal island flap: Single-surgeon experience with 102, cases. Indian J Urol. 2013;29(1):48-52.
9. Badawy H, Fahmy A. Single- vs. multi-stage repair of proximal hypospadias: The dilemma continues. Arab J Urol. 2013;11(2):174-81.
10. Ozturk H, Onen A, Otçu S, Kaya M, Ozturk H. The outcome of one-stage hypospadias repairs. J Pediatr Urol. 2005;4(1):261-6.

Cite this article as: Kumar A, Narayan C, Faiz N. Case series: long term experience with different types of hypospadias and its correction by single stage procedure. Int Surg J 2018;5:1428-31.